RC RESOURCES, INC.

ROCK CREEK EVALUATION ADIT PROJECT

REVISED APPLICATION FOR EXPLORATION LICENSE

Prepared for:

Montana Department of Environmental Quality
Helena, MT

and

USDA Forest Service
Kootenai National Forest
Libby, Montana

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EXECUTIVE SUMMARY

RC Resources, Inc. proposes to develop an evaluation adit for the Rock Creek orebody in the Cabinet Mountains. The evaluation adit would address several primary functions:

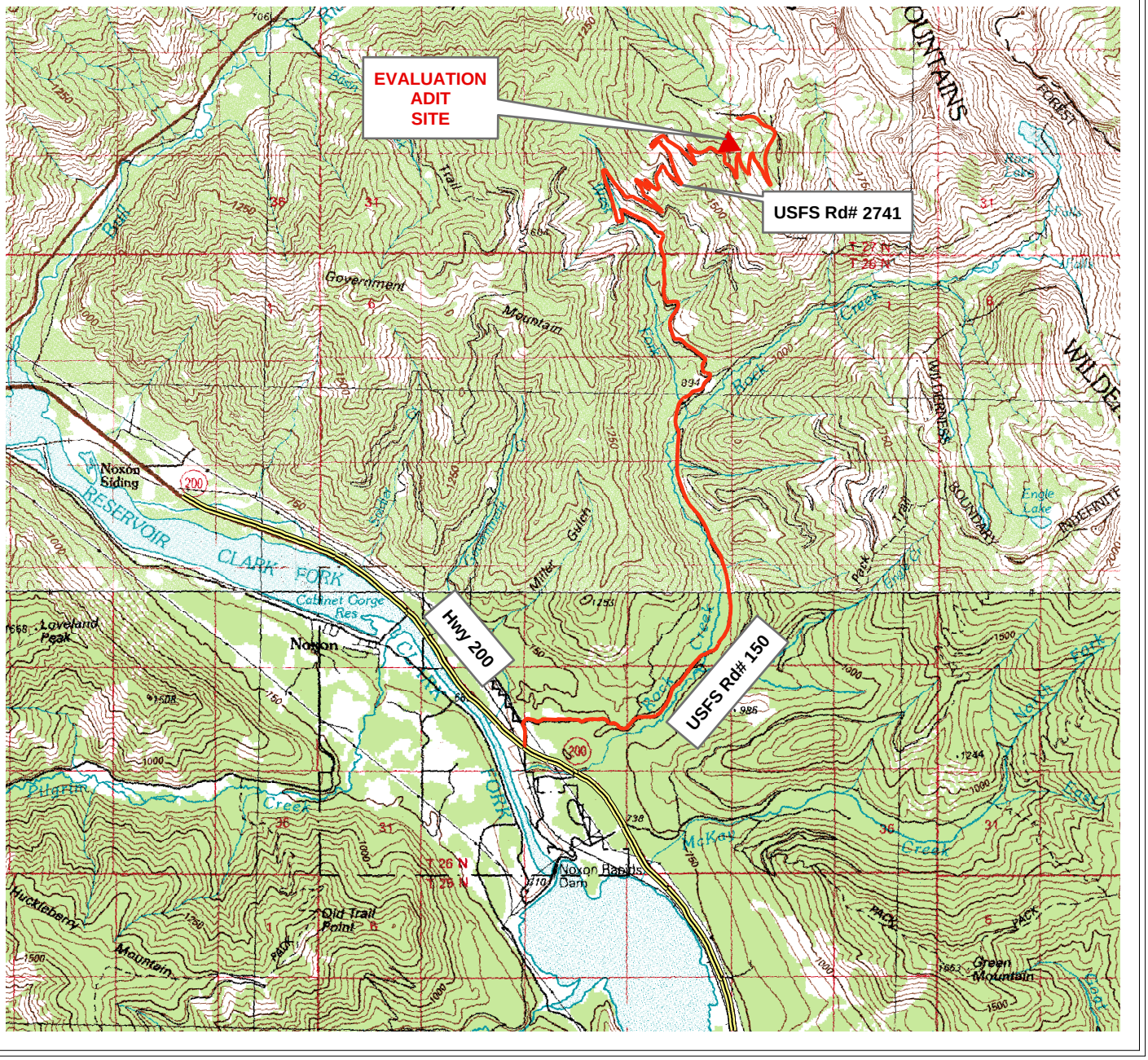
- To evaluate a portion of the ore zone in the Chicago Peak ore block and compare this information with diamond drill hole information in this area;
- To evaluate the Copper Lake Fault and collect additional information on the strike, dip, and offset of the fault;
- To obtain rock mechanics data to aid underground mine design;
- To obtain hydrologic and geochemical data to supplement previous data and analysis; and
- To obtain bulk ore samples for metallurgical testing.

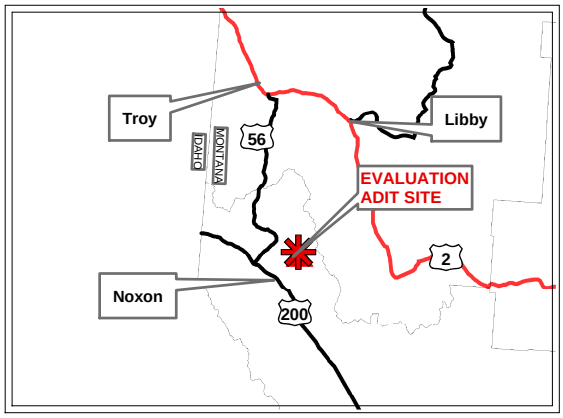
Access to the evaluation adit would be by the existing Rock Creek road (USFS Rd# 150) and Chicago Peak road (USFS Rd# 2741) (Figure 1). The location of the adit, support facilities and access road are shown at larger scale on Exhibit 1. Approximately 2.5 miles of the existing road surface will be modified to improve trafficability and reduce sediment yield. Modifications will include widening of several corners, upgrading water bars to meet Forest standards, installation of new culverts to meet Forest standards and resurfacing to provide a smoother road bed and decrease sediment production.

Estimated disturbance for the evaluation adit project is 10 acres at the adit site (10.6 acres including new access roads and septic system), 5.1 acres of disturbance associated with road improvements (including 0.64 acres at the borrow area), 1 acre at the water disposal site and 3.1 acres at the support facilities for a total of about 19.8 acres.

The Final Environmental Impact Statement (FEIS) for the Rock Creek Project (MDEQ and USFS, 2001) and the separate Records of Decision (ROD) from each agency outlined a number of monitoring and mitigation measures that are required for implementation of the evaluation adit phase of the Rock Creek Project. Appendix A provides a cross reference indicating where stipulations in the ROD are addressed in this revised Plan.

This revised Plan of Operations for the evaluation adit program is based on the original application made in July 1992 and incorporates revisions made in October 1992 and February 1993 in response to agency review and comments on the Plan. In a number of cases, changes to the original Plan and subsequent modifications were required to satisfy stipulations in the ROD. The intent of this revision is to incorporate all of the modifications resulting from the previous reviews and the requirements of the ROD.





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ROCK CREEK EVALUATION ADIT PROJECT SANDERS COUNTY, MT	PROPOSED EVALUATION ADIT LOCATION	Figure 1

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ROCK CREEK EVALUATION ADIT PROJECT
REVISED APPLICATION FOR EXPLORATION LICENSE

1.0 ENVIRONMENTAL INFORMATION

1.1 CLIMATOLOGY/AIR QUALITY

Climatology and air quality for the area have been described in detail in the original application for operating permit for the Rock Creek Project (Asarco 1987, as revised) and in an application for an air quality permit to the Air Quality Bureau for the Rock Creek Project.

An evaluation of potential sources of air pollutants indicates that an air quality permit is not necessary for the evaluation adit. Self-propelled vehicles are exempted by ARM 16.8.1102(c). Potential emissions from a backup propane electric generator to be used in case of line failure are less than levels that trigger Prevention of Significant Deterioration (PSD) review.

1.2 HYDROLOGY

1.2.1 Surface Water

RC Resources, Inc.'s proposed evaluation adit area lies within the headwaters of the West Fork of Rock Creek drainage (see Exhibit 1) and is within the study area boundary of the water resources baseline study conducted in 1986 and 1987 (Hydrometrics, 1987). The adit area is proximal to an unnamed tributary of the West Fork of Rock Creek. The proposed adit location is approximately 2,000 feet south and 500 feet vertically below the drainage divide which separates the West Fork of Rock Creek and Copper Gulch.

The unnamed tributary is ephemeral near the proposed adit location and becomes perennial approximately 0.8 miles below the proposed adit location where two springs (SP-4 and SP-19, Exhibit 1) provide perennial flows. During the baseline study period and during reconnaissance in August 1991 no surface flows were observed in the vicinity of the

proposed adit location. It is likely that the ephemeral section of the stream only flows for a brief period during the spring snowmelt period. Surface flows for the unnamed tributary at monitoring site WRC-4 upstream of the proposed plant site are available in the baseline water resources report and subsequent annual water resources monitoring reports (Hydrometrics 1987, 1988, 1989, and 1990). Observed flow at sites WRC-4 range from 0.1 to 6.6 cubic feet per second.

No surface water quality data for the ephemeral portion of the tributary has been collected due to the lack of observed flows. Surface water quality data for site WRC-4 is included in the baseline water resources report and subsequent annual water resources monitoring reports (Hydrometrics 1987, 1988, 1989, 1990, 1992, 1994, 1995, 1996a, 1996b, 1997, 1998, 1999, 2000).

Limited surface water use in upper West Fork of Rock Creek occurs. Montana DNRC water right files for T27N, R32W were reviewed in November 1991 and only two water rights for temporary use of West Fork Rock Creek were found. The first water right is held by US Borax and Chemical Corp. for exploratory drilling use at the rate of 12 gpm from a diversion point in the southeast quarter of Section 33, T27N, R32W. The second water right is held by RC Resources, Inc. for exploratory drilling use at the rate of 10 gpm from a diversion point on an unnamed tributary to West Fork Rock Creek located in the northwest quarter of Section 34, T27N, R32W.

1.2.2 Groundwater

Limited detailed information on the hydrogeology of the adit area is available. The site is situated atop colluvium and/or shallow bedrock material. Bedrock materials consist of quartzite of the upper Revett Formation. One horizontal exploration drillhole was drilled to a length of 1,420 feet along the proposed adit alignment. Less than 5 gpm of water was encountered in this drillhole.

No springs occur in the immediate vicinity of the proposed adit location. The nearest springs (SP-4 and SP-19) are located approximately 0.8 mile below the proposed adit area. Flows from these springs are estimated to range from 20 to 100 gpm (Hydrometrics, 1987).

Based on the available data, groundwater movement in bedrock material in the vicinity of the proposed adit area appears to be minor. There are no major springs and no base stream-flow in drainage channels in the area. Most groundwater movement probably occurs through faults, fractures, and joints. Appendix B contains a calculation of estimated groundwater inflow to the adit and evaluation workings.

Montana DNRC water right files for T27N, R32W were reviewed in November 1991 and August 2005. No water rights for groundwater use in the area were found.

1.3 GEOLOGY

The evaluation adit will be collared in an unmineralized outcrop of the Upper Revett Quartzite and will be driven within the Revett Quartzite to the orebody, which is located in the upper portion of the Lower Revett Quartzite. Please refer to Volume 1, Environmental Baseline Reports, Rock Creek Project, Sanders County, Montana for a discussion of physiography, regional geology, regional seismicity, the geology of the orebody and mineralization. Figure 2 shows a cross section of the Evaluation Adit with respect to the geology.

Appendix C contains a summary of geochemical data collected from the Troy mine.

1.4 SOILS

1.4.1 Introduction

A detailed soil survey was conducted on the area associated with the adit site and the Chicago Peak access road in 1991; the soil survey was field checked in June 2005. The 2005 survey confirmed the previous survey results.

Physiography consists of moderately steep to steep mountain slopes grading to a small level area at the adit site. The area is overlain with a loess-volcanic ash mantle. Soils overlay siltites and quartzites of the Belt series (Asarco, 1987a).

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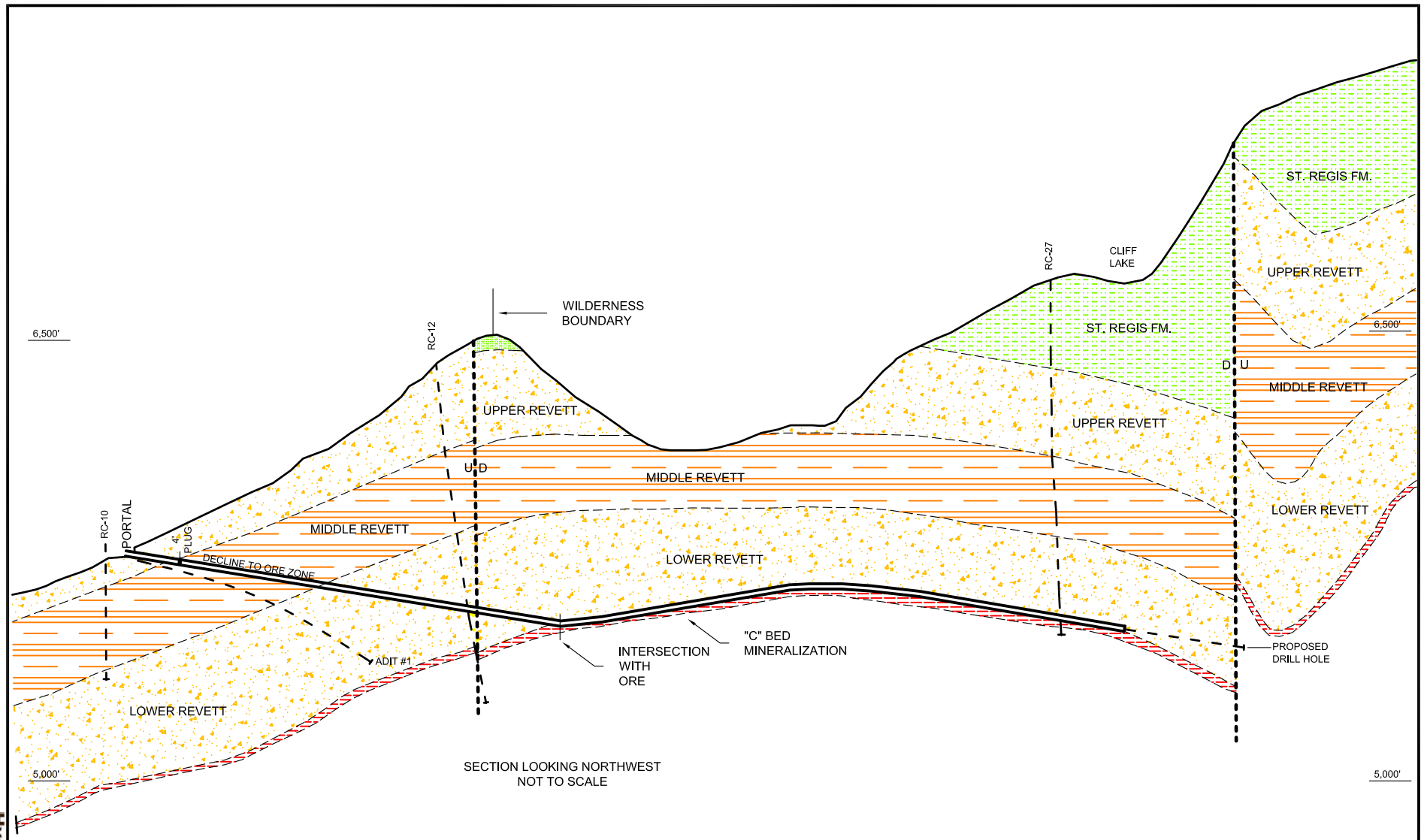

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ROCK CREEK
EVALUATION ADIT PROJECT
SANDERS COUNTY, MONTANA

PROPOSED EVALUATION ADIT CROSS-SECTION

FIGURE
2

Average annual precipitation at the adit site is 70 to 80 inches per year; the average air temperature is 40 degrees fahrenheit, and the average growing season is 30 to 50 days (USDA, 1984).

Soils are in early stages of development, consisting of skeletal silty loams and loams. Volcanic ash mantle textures are classified as silty and silty loam and range between 0 to 3 inches in depth.

1.4.2 Purpose

The detailed soil survey was conducted to: 1) determine the location and extent of the major soils in the area, and 2) to determine availability, quantity and quality of soil materials suitable for use as coversoil in reclamation.

1.4.3 Methods

A detailed field soil survey was conducted on the adit site and access road in September 1991; the proposed adit patio was mapped by photo interpretation and interpolation of field data.

The survey was conducted utilizing procedures outlined in USDA handbooks 18, 430 and 436. The USDA Kootenai National Forest Area Land System Inventory (1984) was used as a reference in mapping.

Major soils have been designated alphabetically rather than by name to avoid any conflict with Forest Service nomenclature or SCS soil series names and correlations.

In the field, soil that differed in physical and/or chemical characteristics from adjoining soils was delineated and mapped on 1:2,400, 20 foot contour interval topographical maps.

Each major soil was exposed from the surface to bedrock, to unsuitable salvage material, or to 60 inches, whichever occurred first. The exposed pedon was described and characterized by sequential horizon. Samples were collected from each horizon over 3 inches in thickness.

Those horizons 3 inches and under were included in the most similar adjacent horizon. Unless suitable soil for salvage was in short supply, soils that were considered exempt from sampling were those that were very shallow (under 6 inches total soil depth), on very steep slopes (over 50 percent) and/or contained coarse fragments in excess of 50 percent. Two samples were collected and sent to Intermountain Laboratory in Bozeman, Montana for analysis. Table 1 lists the soil characteristics tested and the methods of analysis.

Soil characteristics such as textural class, permeability rating, available water holding capacity, effective rooting depth, and potential wind erosion rating are provided by the USDA National Soils Handbook (USDA, 1983). The potential water erosion ratings were determined using USDA Handbook Number 537 (USDA, 1978).

The soil erodibility factor (K) was determined and corrected for coarse fragment content using the nomographs and conversion tables in the National Soils Handbook (USDA, 1983).

TABLE 1. CHEMICAL AND PHYSICAL PARAMETERS ANALYZED TO DETERMINE SALVAGEABLE SOILS

Physical Parameters	**Methods**
Textures Sand percent Silt percent Clay percent	USDA Handbook No. 18, pp. 205-223
Coarse fragment percent	No. 10 sieve
Saturation percentage	USDA Handbook No. 60, Methods 2, 3 and 4
Chemical Parameters	
PH	USDA Handbook No. 60, Method 21a
Electrical conductivity	USDA Handbook No. 60, Methods 2, 3 and 4
Organic matter	Potassium dichromate (Walkley-Black Procedure) ASA Monograph No. 9, Methods 29-3 and 29-4

The soil survey for the adit patio was conducted by interpretation of 9 x 9 black and white aerial photographs and interpolation of soil survey data collected for the adit area and access road.

Soil salvage depths for each soil type were determined using laboratory and field data in conjunction with USDA soil suitability guidelines (USDA, 1983) and Soil Science Society of America Special Publication Number 13 (SSSA, 1984).

1.4.4 Results and Discussion

1.4.4.1 Soils Series and Map Unit Descriptions

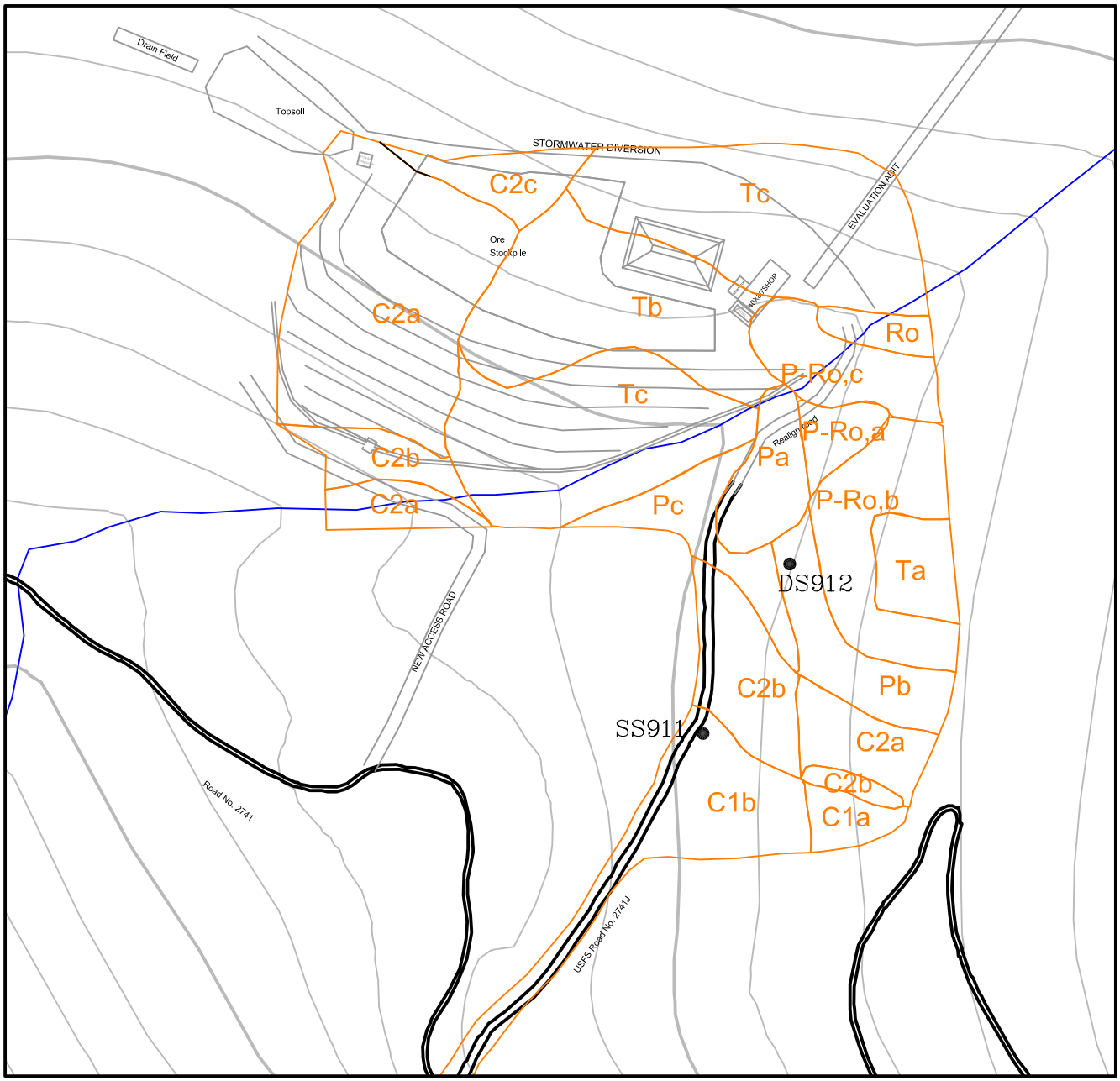
The adit site and access road (above 5,500 feet elevation) were comprised of 16 map units consisting of six phases of two soil types, the C and P, three slope phases of talus (T) and an RO map unit (rock outcrop). Phase differences of the C and P soils included variations in coarse fragment content, soil depth to lithic contact and slope. Below 5500 feet elevation, the access road is located on steep and very steep phases of the YD-ZF complex soils (Asarco, 1987b).

Map units, sample site locations and description site locations are delineated on Figure 3. Map units and slope designations, as listed on the legend of Figure 3, are shown in Table 2.

C1a Gravelly, Extremely Cobbly Silty Loam, 15 to 30 Percent Slopes

The C1a soil consists of moderately deep to deep, well drained, gravelly, extremely cobbly silty loams derived from volcanic ash over and mixed with weathered quartzite and siltite residuum and colluvium. These soils are located on moderately steep to steep slopes.

Permeability is moderate to moderately rapid and the available water holding capacity is low due to the skeletal characteristic of the soil. The effective rooting depth is greater than 36 inches. If disturbed, the potential for surface runoff is severe and the erosion potential is severe for water and moderate to severe for wind.



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Map Unit	Slope Class (%)
C1a gravelly, extremely cobbly silty loam	15 – 30
C1b gravelly, extremely cobbly silty loam	25 – 45
C1c gravelly, extremely cobbly silty loam	40 - >50
C2a gravelly, very cobbly, bouldery silty loam	15 – 30
C2b gravelly, very cobbly, bouldery silty loam	25 – 45
C2c gravelly, very cobbly, bouldery silty loam	40 - >50
Pa gravelly, cobbly silty loam	0 – 15
Pb gravelly, cobbly silty loam	15 – 30
Pc gravelly, cobbly silty loam	25 – 40
P-RO,a Complex	0 – 15
P-RO,b Complex	15 – 50
P-RO,c Complex	40 - >50
Ta (talus)	15 – 40
Tb (talus)	30 – 50
Tc (talus)	45 - >50
RO (rock outcrop)	40 - >50

● SS911 SOIL SAMPLE SITE

● DS912 SOIL DESCRIPTION SITE

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EVALUATION ADIT SOILS

FIGURE 3

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TABLE 2. MAP UNITS AND SLOPE CLASS

Map Unit	Slope Class (%)
C1a gravelly, extremely cobbly silty loam	15 – 30
C1b gravelly, extremely cobbly silty loam	25 – 45
C1c gravelly, extremely cobbly silty loam	40 - >50
C2a gravelly, very cobbly, bouldery silty loam	15 – 30
C2b gravelly, very cobbly, bouldery silty loam	25 – 45
C2c gravelly, very cobbly, bouldery silty loam	40 - >50
Pa gravelly, cobbly silty loam	0 – 15
Pb gravelly, cobbly silty loam	15 – 30
Pc gravelly, cobbly silty loam	25 – 40
P-RO,a Complex	0 – 15
P-RO,b Complex	15 – 50
P-RO,c Complex	40 - >50
Ta (talus)	15 – 40
Tb (talus)	30 – 50
Tc (talus)	45 - >50
RO (rock outcrop)	40 - >50

Taxonomic Class: Andic Cryochrept, Loamy Skeletal, Mixed

A representative profile of the C gravelly, extremely cobbly silty loam is located on a road cut 340 feet south and 25 feet west of the northeast corner of Section 34, T27N, R32W (sample site (SS) 911).

Surface Rock: Rock outcrops comprise less than 10 percent of the map unit.

Oi horizon: 1 – 0 inches; forest litter of herbaceous materials and branches.

A horizon: 0 – 3 inches; brown (7.5 YR 5/4) cobbly loam, dark brown to brown (7.5 YR 4/2) moist; moderate, medium granular structure; soft, very friable, slightly sticky, slightly plastic; abundant fine roots; 12 percent angular gravels, 15 percent angular cobbles, trace boulders; noneffervescent; very strongly acid (pH 4.9); clear wavy boundary.

C1 horizon: 3 – 26 inches; yellowish brown (10 YR 5/8) gravelly, extremely cobbly silty loam, dark yellowish brown (10 YR 4/4) moist; massive structure; slightly hard, friable, sticky and slightly plastic; common fine roots; 20 percent angular gravels, 65 percent angular cobbles, trace boulders; noneffervescent; strongly acid (pH 5.4); diffuse, wavy boundary.

C2 horizon: 26 – greater than 36 inches; same characteristics as the C1 horizon with the exception of few fine roots; diffuse, wavy boundary.

Range in Characteristics

The O horizon ranges from 0 to 3 inches. Boulders in the C horizons, especially the C2 horizon and deeper, are commonly less than 15 percent by volume. A few very small pockets of nonskeletal soils can be found.

Inclusions

Soils included within this map unit are the C2 and P as well as the shallow P-RO soils.

Salvage

The C1a soil is unsuitable for salvage to an average depth of 3 inches and is unsuitable below 3 inches due to excessive coarse fragments. The adit site area appeared to have a lack of suitable soil, therefore the C1 soil was sampled to a depth of 26 inches even though there were excessive coarse fragments.

C1b Gravelly, Extremely Cobbly, Silty Loam, 25 to 45 Percent Slopes

This soil is the same as the C1a soil, with the exception of slope. Salvage depth is the same as for the C1a soil.

C1c Gravelly, Extremely Cobbly, Silty Loam, 40 to Over 50 Percent Slopes

This soil is the same as the C1a and the C1b, with the exception of slope. Salvage is the same as for the C1a and C1b soils.

C2a Gravelly, Very Cobbly, Bouldery Silty Loam, 15 to 30 Percent Slopes

The C2a soil, a phase of the C1 soil, consists of moderately deep to deep, well drained, gravelly, very cobbly, bouldery silty loams. These soils have the same characteristics as the C1 soil except for an increase in boulder content.

Range in Characteristics

The range in characteristics for the C2 soils is the same as for the C1 soils except the boulder content can often exceed 35 percent by volume throughout the profile.

Inclusions

Soils included within this map unit are the C1, P and the shallow P-RO.

Salvage

Salvage depths are the same as the C1 soils.

C2b Gravelly, Very Cobbly, Bouldery Silty Loam, 25 to 45 Percent Slopes

This soil is the same as the C2a soil, with the exception of slope. Salvage depth is the same as for the C2a soil.

C1c Gravelly, Very Cobbly, Bouldery Silty Loam, 40 to over 50 Percent Slopes

This soil is the same as the C2a and the C2b, with the exception of slope. Salvage is the same as for the C2a and C2b soils.

Pa Gravelly, Cobbly Silty Loam, 0 to 15 Percent Slopes

The Pa soil consists of shallow, well drained gravelly, cobbly silty loams derived from volcanic ash over and mixed with weathered quartzite and siltite residuum and colluvium. Lithic contact appears at 1 to 5 inches in depth.

Permeability is moderately rapid to lithic contact and the available water holding capacity is low. Effective rooting depth is up to 7 inches as roots occasionally penetrate paralithic rock. If disturbed, the potential for surface runoff is moderate to severe and the erosion potential is severe for water and moderate to severe for wind.

Taxonomic Class: Lithic Cryochrept, Medial - Skeletal

A representative profile of the P gravelly, cobbly silty loam is located in a forested area 65 feet south and 150 feet east of the northwest corner of Section 35, T27N, R32W (description site (DS) 912). This soil was not sampled for laboratory analysis due to its shallow depth to bedrock and similarity to the C1 soil.

Surface Rock: Rock outcrops comprise less than 15 percent of the unit.

Oi horizon: 1 – 0 inches; forest litter of herbaceous materials and branches.

A horizon: 0 – 5 inches; brown (7.5 YR 5/4) cobbly silty loam, dark brown to brown (7.5 YR 4/2) moist; moderate, medium granular structure; soft, very friable, slightly sticky, nonplastic; abundant fine roots; 15 percent angular gravels, 15 percent angular cobbles, trace boulders; noneffervescent; clear wavy boundary.

R horizon: Greater than 5 inches; bedrock.

Range in Characteristics

The O horizon ranges from 0 to 3 inches. Ash deposits are often mixed with organic and other mineral materials. They are also commonly found covered by colluvial or slope wash materials up to 4 inches deep. In most cases, the P soil exhibits a one inch ash layer.

Inclusions

Soils included within this map unit are the P-RO, C1 and C2, as well as talus (T) and rock outcrop (RO).

Salvage

The Pa soil is suitable for salvage to an average depth of 5 inches. Lithic contact is encountered below 5 inches.

Pb Gravelly, Cobbly, Silty Loam, 15 to 30 Percent Slopes

The Pb soil is the same as the Pa soil, with the exception of slope. Salvage depth is the same as the Pa soil.

Pc Gravelly, Cobbly, Silty Loam, 25 to 40 Percent Slopes

The Pc soil is the same as the Pa and the Pb, with the exception of slope. Salvage depth is the same as the Pa and Pb soils.

P-RO Complex

The P-RO mapping unit is composed of 60 percent P soils and 40 percent rock outcrop.

T Unit

The T mapping unit consists of rock talus over bedrock as well as over skeletal soils. Where soils are covered, the talus is at least 12 inches deep. Inclusions within this unit consist of large slabs of broken bedrock much larger than is commonly associated with talus.

RO Unit

The RO mapping unit identifies rock outcrops.

1.4.4.2 Laboratory Analysis

The P soils were typically less than 6 inches deep, therefore, only the C soil was sampled for laboratory analysis. Table 3 shows laboratory analytical data for key soil parameters used to verify soil suitability for salvage.

Physical Parameters

Soil textures, organic matter content, and saturation percentage were favorable. Coarse fragment contents below the surface horizons are high but due to the short supply of soil material for reclamation, the upper subsurface horizon of the C1 soil was included for laboratory analysis.

The K factor is directly proportional to structural development, impermeability, and amounts of fine sand and silt. It is indirectly proportional to organic matter content, coarse fragment content, sand, and permeability.

Soils in the adit site area exhibit low K factors due to loamy textures, high coarse fragment contents and high organic matter contents.

A combination of excessive coarse fragments, shallow depth to bedrock, exposed bedrock, talus and slope steepness are the major physical factors restricting availability of suitable soil.

Chemical Parameters

Soil pH values range from very strongly acid to strongly acid (4.9 to 5.4). This range is typical for cool, high elevation soils containing high amounts of organic matter. Well developed vegetation on C soils indicates that pH is not a limiting factor. Electrical conductivities (EC) are favorable and are not a limitation for soil suitability for salvage. There were no chemical parameters limiting soil salvage in the study area.

TABLE 3. SOIL LABORATORY ANALYSES

Sample Site	Map Unit	Soil Depth (in.)	pH	EC mmhos/cm	Saturation %	Coarse Fragments (% Volume)	Sand%	Silt %	Clay%	Texture	Organic Matter Content	K Factor Associated w/Coarse Fragments (assuming 10% fine sand)
SS-911	C	0-3	4.9	0.13	126.0	27	39.8	47.8	12.4	LOAM	11.0	0.17
		3-26	5.4	0.07	83.2	85	33.5	54.1	12.4	SILT LOAM	3.8	0.03

1.4.4.3 Soil Suitability for Salvage

Soil depths and soil salvage depths are shown for each map unit in Table 4. Salvage depths listed serve as a guideline for soil salvage and can vary within each map unit. Equipment operators must make site-specific adjustments where rock outcrops and talus material may preclude soil salvage.

1.4.5 Support Facility Soils

Soils in the support facilities have been mapped and described in the Application for a Hard Rock Operating Permit, Rock Creek Project, Sanders County Montana (Asarco, 1987 as revised). Soils at the support facility site are mapped as F unit silty loam soils dominated by fine grained material to a depth of 19 inches.

1.4.5.1 Support Facility Soil Suitability for Salvage

F soils at the support facility location are suitable for salvage to an average depth of 19 inches, below that they contain excessive coarse fragments and sand. F soils will be salvaged to a depth of 24 inches as required by the ROD. F soils will be salvaged in two lifts with first and second lift soils stored separately.

1.5 VEGETATION

1.5.1 Introduction and Methods

A baseline vegetation inventory of the Rock Creek Mine area was conducted in 1985 and is included in the application in Volume 1 of the Environmental Baseline Reports. Since the evaluation adit site is outside of the original vegetation study area, an inventory of the adit site was conducted during fall 1991. Additional vegetation surveys, primarily designed to assess sensitive plant species, were conducted in 1995, 1996, 1998 and 1999 and are summarized in the 2001 FEIS (MDEQ and USFS 2001).

Canopy cover by species was estimated on five 0.1-acre circular ecodata plots. Tree density was assessed by counting trees by species and size class on the ecodata plot. Shrubs were counted by species and age class on six randomly distributed 0.001-acre circular plots. Potential sensitive plant taxa were evaluated by identifying known species in the field and by collecting and identifying any unknown taxa in the office. The "Updated Northern Region Sensitive Species List" (May 1991) was used to ascertain sensitive status.

TABLE 4. CHARACTERISTICS OF SOILS FOR RECLAMATION

Mapping Unit	Soil Textural Classification	Percent Slope	Depth (inches)	Average Depth of Suitable Soil	Reclamation Constraints	Other Comments
C1a	gravelly, extremely cobbly silty loam	15-30	36+	3	Excessive coarse fragments below 3 inches	
C1b	gravelly, extremely cobbly silty loam	25-45	36+	3	Excessive coarse fragments below 3 inches	
C1c	gravelly, extremely cobbly silty loam	40-50+	36+	3	Excessive coarse fragments below 3 inches	This mapping unit only on access roads
C2a	gravelly, very cobbly, bouldery, silty loam	15-30	36+	3	Excessive coarse fragments below 3 inches	
C2b	gravelly, very cobbly, bouldery, silty loam	25-45	36+	3	Excessive coarse fragments below 3 inches	
C2c	gravelly, very cobbly, bouldery, silty loam	40-50+	36+	3	Excessive coarse fragments below 3 inches	This mapping unit only on access roads
Pa	gravelly, cobbly, silty loam	0-15	5	5	Lithic content below 5 inches	
Pb	gravelly, cobbly, silty loam	15-30	5	5	Lithic content below 5 inches	
Pc	gravelly, cobbly, silty loam	25-40	5	5	Lithic content below 5 inches	
P-Ro, a	gravelly, cobbly, silty loam	0-15	5	5	Lithic content below 5 inches	P soil comprise 60% of unit and RO, rock outcrop, comprises 40%
P-Ro, b	gravelly, cobbly, silty loam	25-50	5	5	Lithic content below 5 inches	P soil comprise 60% of unit and RO, rock outcrop, comprises 40%
P-Ro, c	gravelly, cobbly, silty loam	40-50+	5	5	Lithic content below 5 inches	P soil comprise 60% of unit and RO, rock outcrop, comprises 40%. All areas over 50% slope located upslope from any facilities
Ta	-	15-40	0	0	rock	unsuitable
Tb	-	30-50	0	0	rock	unsuitable
Tc	-	50+	0	0	Rock	unsuitable
RO	-	35-50	0	0	Rock	unsuitable

1.5.2 Results and Discussion

Vegetation Type Description

Two vegetation types were sampled in the evaluation adit area: the mountain hemlock/rusty menziesia (Tsuga mertensiana/Menziesia ferruginea) habitat type and scree. Figure 4 shows the distribution of the types. Cover data and tree and shrub density data are presented in Tables 5 and 6, respectively.

Mountain Hemlock/Rusty Menziesia Habitat Type

Mountain hemlock and/or subalpine fir dominated the three sites sampled in this type averaging 35 to 33 percent cover respectively. Other tree species averaging at least one percent cover were western larch (Larix occidentalis) and Engelmann spruce (Picea engelmannii).

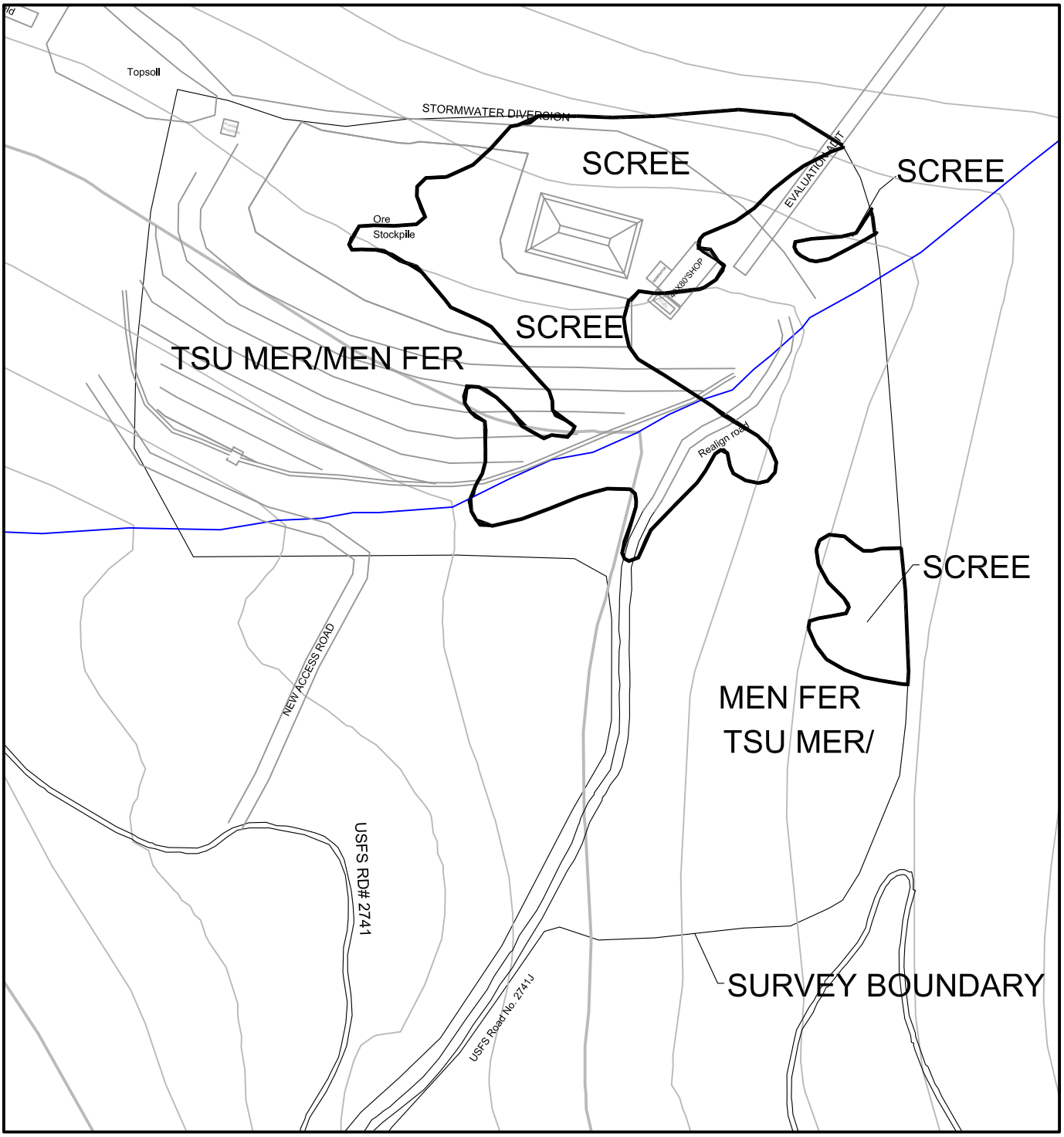
The understory is dominated by a shrub layer (45 percent cover) with grouse whortleberry (Vaccinium scoparium) averaging 18 percent cover. Rusty menziesia and blue huckleberry (Vaccinium membranaceum) are also important shrubs averaging 16 percent cover each. Forb cover averages 18 percent comprised primarily of beargrass (Xerophyllum tenax). Perennial graminoids are minor understory components averaging less than one percent cover. Only smooth woodrush (Luzula hitchcockii) exceeded one percent on any plot.

Total tree density averaged 1,090 stems/acre of which 280 stems/acre were larger than seedlings (1 inch or larger diameter class). Subalpine fir was most abundant averaging 690 stems/acre followed by mountain hemlock at 380 stems/acre.

Total shrub density averaged 33,200 stems/acre, the majority of which were nearly equally split between grouse whortlesberry and blue huckleberry.

Scree

The scree type was characterized by high rock cover (96 percent) and sparse vegetation. Shrubs were the dominant morphological class providing 10 percent average cover, mainly



TSU MER/ MEN FER =Mountain Hemlock/Rusty Menziesia (Tsuga mertensiana/Menziesia ferruginea) habitat type

SCREE = Scree / Talus / Rock

SCALE
0 (In Feet) 200

NORTH

ROCK CREEK EVALUATION ADIT PROJECT SANDERS COUNTY, MONTANA REVISED JANUARY 2007	**EVALUATION ADIT VEGETATION**	**FIGURE** **4**

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Hydrometrics, Inc.
Consulting Scientists and Engineers

TABLE 5. PERCENT CANOPY COVER/CONSTANCY BY CLASS AND SPECIES FOR 5 ECODATA PLOTS SAMPLED IN TWO VEGETATION TYPES, ROCK CREEK ADIT STUDY AREA, 1991

	ECODATA PLOT NUMBER						
	TSUGA MERTENSIANA/ MENZIESIA FERRUGINEA H.T.				VEGETATED SCREE		
	RCA-1	RCA-2	RCA-4	Mean n=3	RCA-3	RCA-5	Mean n=2
GROUND COVER							
Bare soil	-	-	T	0.2/33	-	-	-
Gravel	-	T	T	0.3/67	T	T	0.5/100
Rock	2	15	20	12.3/100	93	98	95.5/100
Litter	88	73	66	75.7/100	5	1	3.0/100
Wood	5	3	6	4.7/100	T	T	0.5/100
Moss	1	5	4	3.3/100	T	-	0.2/50
Lichens	T	T	T	0.5/100	-	-	-
Basal vegetation	4	4	3	3.7/100	1	T	0.8/100
VEGETATION STRUCTURE (nonstratified)							
Total tree cover	80	65	65	70.0/100	2	-	1.0/50
Total shrub cover	36	65	35	45.3/100	14	6	10.0/100
Total graminoid cover	T	2	-	0.8/67	T	T	0.5/100
Total forb cover	21	16	17	18.0/100	12	T	6.2/100
CLASS\SPECIES							
PERENNIAL GRAMINOIDS							
Agrostis scabra	-	-	-	X	-	-	-
Calamagrostis canadensis	-	-	-	X	T	-	0.2/50
Calamagrostis purpurascens	-	-	-	-	-	-	X
Carex pachystachya	-	-	-	X	-	-	-
Dactylis glomerata	-	-	-	X	-	-	-
Juncus mertensianus	-	-	-	X	-	-	-
Juncus parryi	-	-	-	X	T	T	0.5/100
Luzula hitchcockii	T	2	-	0.8/67	-	-	-
Phleum pratense	-	-	-	X	-	-	-
TOTAL PG	0.5	2	-	0.8/67	1	0.5	0.8/100

TABLE 5. PERCENT CANOPY COVER/CONSTANCY BY CLASS AND SPECIES FOR 5 ECODATA PLOTS SAMPLED IN TWO VEGETATION TYPES, ROCK CREEK ADIT STUDY AREA, 1991 (continued)

	ECODATA PLOT NUMBER						
	TSUGA MERTENSIANA						
	MENZIESIA FERRUGINEA H.T.				VEGETATED SCREE		
	RCA-1	RCA-2	RCA-4	Mean n=3	RCA-3	RCA-5	Mean n=2
PERENNIAL FORBS							
Anaphalis margaritacea	-	-	-	X	-	-	-
Arenaria capillaries	-	-	-	-	-	-	X
Cryptogramma crispa	-	-	-	-	T	-	0.2/50
Epilobium angustifolium	-	-	-	X	-	-	X
Goodyera oblongifolia	1	T	-	0.5/67	-	-	-
Hieracium albiflorum	-	-	-	X	-	-	-
Penstemon ellipticus	-	-	-	-	-	-	X
Pyrola secunda	1	-	-	0.3/33	-	-	-
Rumex acetosella	-	-	-	X	-	-	-
Xerophyllum tenax	20	16	17	17.7/100	12	T	6.2/100
TOTAL PF	22	16.5	17	18.5/100	12.5	0.5	6.5/100
SHRUBS							
Cassiope mertensiana	-	-	-	X	-	-	-
Menziesia ferruginea	6	25	17	16.0/100	10	4	7.0/100
Rubus idaeus	-	-	-	X	3	1	2.0/100
Sorbus sitchensis	1	2	-	1.0/67	-	-	-
Vaccinium membranaceum	25	12	12	16.3/100	1	-	0.5/50
Vaccinium scoparium	8	35	10	17.7/100	-	1	0.5/50
TOTAL SHRUBS	40	74	39	51.0/100	14	6	10.0/100
TREES							
Abies lasiocarpa	20	40	40	33.3/100	2	-	1.0/50
Larix occidentalis	15	-	-	5.0/33	-	-	-
Picea engelmannii	-	4	5	3.0/67	-	-	-
Pinus contorta	1	-	-	0.3/33	-	-	-
Pinus monticola	2	-	-	0.7/33	-	-	-
Tsuga mertensiana	55	25	25	35.0/100	-	-	-
TOTAL TREES	93	69	70	77.3/100	2	-	1.0/50
TOTAL VEGETATION (Stratified)	155.5	161.5	126	147.7/100	29.5	7	18.2/100

TABLE 6. TREE DENSITY (STEMS/0.1 ACRE) AND SHRUB DENSITY (STEMS/0.001 ACRE)

ECODATA PLOT NUMBER

	TYPE	TSUGA MERTENSIANA/MENZIESIA FERRUGINEA H.T.				SCREE		
	PLOT SIZE CLASS	RCA-1	RCA-2	RCA-4	Mean n=3	RCA-3	RCA-5	Mean n=2
		1 - 2 - 3 - 4 - 5	1 - 2 - 3 - 4 - 5	1 - 2 - 3 - 4 - 5	1 - 2 - 3 - 4 - 5	1 - 2 - 3 - 4 - 5	1 - 2 - 3 - 4 - 5	1 - 2 - 3 - 4 - 5
TREE SPECIES								
Abies lasiocarpa		35- 8 - 4 - 3 - 0	75-10 - 3 - 1 - 0	50- 8 - 7 - 3 - 0	53- 9 - 5 - 2 - 0	6 - 2 - 1 - 0 - 0	-	3 - 1 -<1 - 0 - 0
Larix occidentalis		0 - 0 - 0 - 1 - 1	-	-	0 - 0 - 0 -<1 - <1	-	-	-
Picea engelmannii		-	0 - 0 - 0 - 0 - 1	0 - 0 - 0 - 0 - 1	0 - 0 - 0 - 0 - <1	-	-	-
Pinus contorta		0 - 0 - 0 - 1 - 0	-	-	0 - 0 - 0 -<1 - 0	-	-	-
Pinus monticola		0 - 0 - 0 - 1 - 0	-	-	0 - 0 - 0 -<1 - 0	-	-	-
Tsuga mertensiana		20- 2 - 5 - 3 - 6	46- 1 - 1 - 4 - 2	17- 4 - 1 - 1 - 2	28- 2 - 2 - 3 - 3	-	-	-
Total		55-10 - 9 - 9 - 7	121-11- 4 - 5 - 3	67-12 - 8 - 4 - 3	81-11 - 7 - 6 - 4	6 - 2 - 1 - 0 - 0	-	3 - 1 <1 - 0 - 0
	AGE CLASS	2 - 3	2 - 3	2 - 3	2 - 3	2 - 3	2 - 3	2 - 3
SHRUB SPECIES								
Menziesia ferruginea		-0.5	-1.2	-0.7	-0.8	-0.2	-0.2	-0.2
Rubus idaeus		- -	- -	- -	- -	-0.5	- -	-0.2
Sorbus sitchensis		0.2 -	- -	- -	<0.1 -	- -	- -	- -
Vaccinium membranaceum		1.5 24.0	-8.5	-14.3	0.5 15.6	- -	- -	- -
Vaccinium scoparium		-14.3	-20.7	-13.7	-16.2	- -	- -	- -
Total		1.7 38.8	-30.4	-28.7	0.6 32.6	-0.7	-0.2	-0.4

Tree size classes: 1 = <1 inch diameter at breast height (dbh), 2 = 1-4.9" dbh, 3 = 5-8.9" dbh, 4 = 9-13.9" dbh, 5 = >14" dbh

Shrub age classes: 2 = young, 3 = mature

rusty menziesia (7 percent cover) and raspberry (2 percent cover). Forbs averaged about 6 percent cover, almost entirely beargrass.

Tree cover and density were low averaging one percent cover and above 45 stems/acre, exclusively subalpine fir.

Shrub density averaged 400 stems/acre, equally divided between rusty menziesia and raspberry.

Rare Plants

Sensitive plant species surveys on or adjacent to the Rock Creek Mine or evaluation adit permit areas have been conducted in 1985 (ASARCO 1987), 1991 (evaluation adit baseline survey), 1995 (KNF unpublished data), 1996 (Elliott 1996) and 1998-1999 (USDA Forest Service KNF 1999).

Sensitive plant species currently listed by the KNF (USDA Forest Service KNF 2005) that have been recorded in the vicinity and relationship to the evaluation adit permit area are:

- **Wavy moonwort, *Botrychium crenulatum*.** Habitats suitable for moonworts in the Rock Creek area occur on floodplain terraces along the main stem of Rock Creek and along the west fork of Rock Creek. Most areas of suitable habitat are small areas at microsites adjacent to the stream, side channels, or seeps that discharge to the creek. The largest block of suitable habitat observed was near the confluence of Engle Creek and Rock Creek where wavy moonworts were observed in 1995. That population could not be relocated during a 1999 survey. It is unlikely that wavy moonwort would be affected by the evaluation adit, roads or support facilities.
- **Common clarkia, *Clarkia rhomboidia.*** Common clarkia grows in dry open forests on the south facing slopes in the mountains from 2,800 to 6,800 feet in elevation. One population had been found in 1995 but could not be relocated in a 1999 survey. Suitable habitat is limited within the proposed permit area and impacts are unlikely.
- **Tarpaper lichen, *Collema curtisporum.*** *Collema curtisporum* grows on the bark of large cottonwoods in riparian stands in narrow sheltered valleys or low montane zones below 3,500 feet. One population was found on large cottonwood tree boles within the riparian area, at the upper Rock Creek crossing for the Alternative V utility and transportation corridor in the 1999 survey. No large cottonwoods would be removed by evaluation adit development.
- **Mouse moss, *Grimmia britoniae.*** Mouse moss grows on calcareous outcrops in warm mesic to drier forests that are very wet in the spring in a valley or low montane zone. One population was found at the base of calcareous cliff facies in the tailings site soil stockpile area in the 1999 survey and would not be affected by the proposed adit.

- **Northern beachfern, *Phegopteris connectilis.*** This plant occurs in cliff crevices and moist banks in wooded regions. On the KNF, this species is strongly associated with low gradient perennial streams surrounded by mature to old growth western redcedar stands. This species is known to occur on the Kootenai National Forest; one population is known to occur within the analysis area, but occurs outside of the proposed permit area (MDEQ and USFS 2001; USDA Forest Service KNF 2000).
- **Stalked moonwort, *Botrychium pedunculosum.*** On the KNF, this species is found in old growth stands of western redcedar (*Thuja plicata*) in floodplain bottoms from 2,600 to 3,200 feet elevation and in a powerline corridor. This species is known to occur within a transient meadow in a powerline corridor north of McKay Creek. This occurrence is outside of the proposed permit area.

Three Potential Category 4 species (*Diphasiatrum sitchense, Andreaea blyttii* and *Racomitrium pygmaeum*) have also been recorded in the vicinity but outside of the evaluation adit permit area (MDEQ and USFS 2001).

In summary, no sensitive species listed by the KNF (2005) are likely to be affected by evaluation adit development.

Weeds

No noxious weeds were found at the evaluation adit site. Spotted knapweed (Centaurea maculosa) occurs on the Chicago Peak road below 5,025 feet elevation.

1.5.3 Support Facilities Area Vegetation

The support facilities vegetation was mapped as part of the Application for a Hard Rock Operating Permit, Rock Creek Project, Sanders County, Montana (Asarco, 1987 as revised). Vegetation at the support facility site is mapped primarily as vegetation type AO (artificial opening) and is bordered by Grand Fir /Beadlily and Western Red Cedar/Beadlily vegetation types.

1.6 WILDLIFE

The Rock Creek Project baseline wildlife study (Farmer and Heath, 1987) encompassed the site of the proposed adit. Farmer and Heath (1987) mapped the site as a mix of subalpine fir/grouse whortleberry and scree habitats, but it is actually mountain hemlock/rusty menziesia and scree habitats (Dean Culwell, personal communication).

Farmer and Health (1987) surveyed the vicinity of the proposed adit by aerial surveys, vehicle routes (the Chicago Peak road runs within 300 feet of the site), and by one breeding bird, small mammal and browse transect and two pellet group transects within 1/4-mile of the site. This survey revealed that the vicinity of the proposed adit is not winter range for any big game species, due to its high elevation and deep snow accumulation.

Joslin (1980) mapped the Chicago Peak area as summer-transitional range for mountain goats and classified it as Management Situation 1. The definition for Management Situation 1 is:

> Areas referred to as Management Situation 1 constitute critical mountain goat range during summer and/or winter. Management Situation 1 applies when mountain goats have been documented to regularly use a specific area during one or more seasons. Specific management depends upon the relevant season.
>
> Management Situation 1 areas are the most sensitive to habitat manipulation and human activity. Every effort should be made to maintain the present integrity of Management Situation 1 areas. Mechanized human activities should not occur in these areas. Human activities on adjacent areas should be kept to a minimum during the season when these areas are used by goats. In cases where human activities in or near a Management Situation 1 area are unavoidable, every precaution should be taken to minimize effects to goats and their habitat and the activity should not occur for longer than one year to avoid disruption of traditional use patterns. Habitat improvement projects should not occur on Management Situation 1 areas without first monitoring and analyzing the results of such attempts toward habitat improvement on Management Situation 2 areas.

Farmer and Heath (1987) never observed mountain goats or evidence (tracks, hair, etc.) on the west flank of Chicago Peak, even though they surveyed this area with 14 helicopter flights, approximately 70 vehicle surveys, three pedestrian surveys during summer across the

slope directly above the proposed adit site, and by one breeding bird, small mammal and browse transect and two pellet group transects within 1/4-mile of the site. Furthermore, Farmer and Health (1987) reported that Joslin (1980) had not reported any sightings from this area, nor were there any reported mountain goat harvest locations in this area during the period 1959-1983. Thus it appears that reason for Joslin's (1980) designation as summer-transitional range and Management Situation 1 was to connect the "confirmed" winter range on East Fork Rock Creek with the "probable" winter range on Copper Gulch.

The primary big game species in the vicinity of the proposed adit from late spring through autumn are elk, mule deer and black bear. Mountain lions might also be expected. White-tailed deer may range into the vicinity but are more commonly found at lower elevations. Moose are not common in the vicinity but could use the site at least seasonally. Mountain sheep do not occur in this area.

The mountain hemlock/rusty menziesia habitat type at the proposed adit site has a comparatively depauperate understory with very few graminoids and only a moderate diversity and coverage of forbs and shrubs (Dean Culwell, personal communication). For big game, it is therefore probably more important for cover (both thermal and security) than for browsing/foraging. Farmer and Health (1987) recorded 10 potential browse species in the general proximity: rusty menziesia, blue huckleberry, grouse whortleberry, western serviceberry, mountain-ash, Rocky Mountain maple, Sitka alder, black elderberry, swamp gooseberry and thimbleberry. Of these, blue huckleberry and rusty menziesia were the most common, but serviceberry and black elderberry received the most browsing; most of the species were only lightly browsed, or not browsed at all.

Farmer and Heath (1987) caught only two species of small mammals in the vicinity of the proposed adit: red-backed vole and deer mouse. Other small and medium sized species that were observed in the general area included pika, snowshoe hare, red-tailed chipmunk, Columbian ground squirrel, red squirrel, northern pocket gopher, heather vole and porcupine. Small and medium-sized predators known from the vicinity included long-tailed weasel, marten and coyote.

Three species of upland game birds occurred in the vicinity of the proposed adit. Ruffed grouse, the most abundant upland game bird in Farmer and Heath's (1987) study area, were commonly found at low to mid elevations. Blue grouse were common but not abundant in the mid to upper elevations of the study area, including the habitats of the proposed adit, while spruce grouse were only occasionally observed.

Farmer and Heath (1987) recorded only 13 species of breeding birds on their transect near the proposed adit: red-naped sapsucker, Hammond's flycatcher, chestnut-backed chickadee, house wren, American robin, varied thrush, hermit thrush, Townsend's solitaire, golden-crowned kinglet, pine siskin, Townsend's warbler, yellow-rumped warbler and warbling vireo. Common ravens were also observed. Due to the transect's high elevation, it was snow covered and occupied by very few displaying songbirds until June.

Farmer and Heath (1987) did not find any raptor nests in the vicinity of the proposed adit, but did observed red-tailed hawks and sharp-shinned hawks within 1/2 mile. Other species observed in the upper Rock Creek drainage were northern goshawk and long-eared owl.

Four Federally-listed threatened or endangered wildlife species (bald eagle – threatened, Canada lynx – threatened, gray wolf – endangered, and grizzly bear – threatened) might occasionally occur in the Rock Creek drainage. Bald eagles would not be expected to utilize the habitats in the vicinity of the proposed adit. Canada lynx may forage/hunt in the vicinity, but the lack of substantial amounts of large woody debris suggests that it is not denning habitat. Gray wolves may hunt through the area, but because the proposed adit vicinity is not important big game summer or winter range, it probably has limited value for wolves. Only grizzly bears would be expected to utilize the habitats in the vicinity of the proposed adit. The adit site is in the Kootenai National Forest's Management Area 14, which "consists of identified Interagency Grizzly situations 1 and 2 that are in conjunction with suitable timber land" (USDA Forest Service, 1987). The goal of the MA is "to maintain or enhance grizzly bear habitat, reduce grizzly/human conflicts, assist in the recovery of the grizzly bear, realize a programmed level of timber production, and provide for the maintenance or enhancement of other wildlife, especially big game" (USDA Forest Service, 1987). Guidelines for mineral management within this MA are that common minerals may be disposed of where compatible with management of other resources, and that seasonal restrictions may apply.

Farmer and Heath (1987) did not positively document grizzly bears in their study area, although Kasworm (1986) reported that the minimum home range polygons of two of three radio-

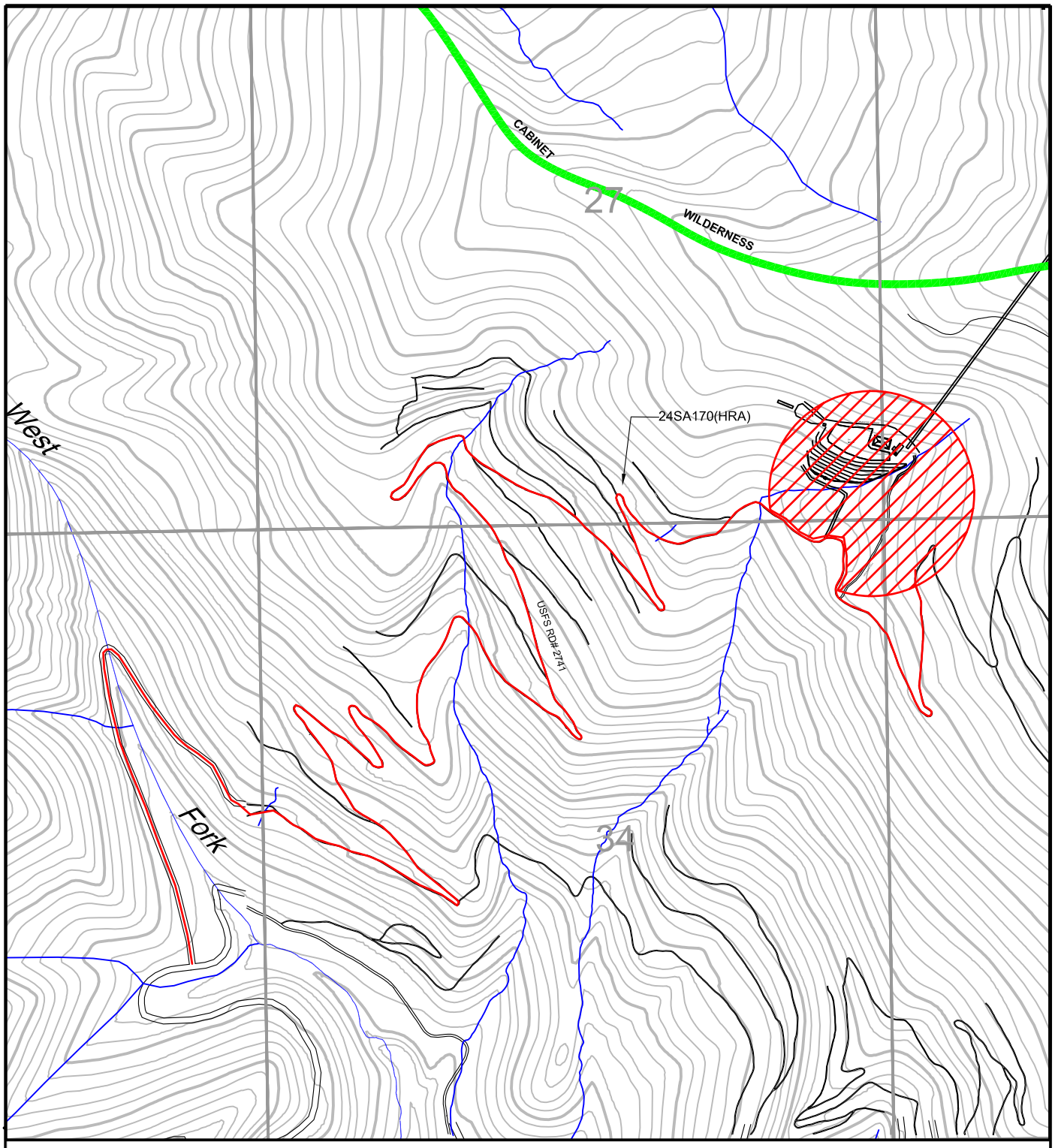
collared grizzly bears in the Cabinet Mountains overlapped all or part of the Rock Creek Project baseline study area. Since then, the U.S. Fish and Wildlife Service (USFWS) has compiled reliable records (sightings and evidence) of grizzly bears in the Cabinet Mountains during the period 1959-2004. Several records came from the Rock Creek Project baseline study area, but most of these were from upper East Fork Rock Creek within the Cabinet Mountains Wilderness. Grizzly bears could occur in the vicinity of the proposed adit, But since the proposed adit site has relatively low understory productivity of shrubs, forbs and grasses, it is likely that the site would be more attractive for security than for foraging.

1.7 CULTURAL RESOURCES

1.7.1 Introduction

RC Resources, Inc. is proposing an evaluation adit near Noxon in Sanders County, Montana. The study area boundaries incorporate 4.6 miles of the Chicago Peak Road as well as approximately 62 acres of land on the south-facing slope of Chicago Peak (Figure 5). These lands will be disturbed by planned development and a cultural resources inventory was conducted to insure that no significant cultural heritage sites would be impacted. The cultural inventory was conducted at a Class III level to satisfy federal and state legislation required cultural resources inventory on federal and private lands, in compliance with the National Historic Preservation Act (Public Law 89-665, as amended) Executive Order 11593 (Protection and Enhanced of the Cultural Environment), and the National Environmental Policy Act and other legislation. The work was contracted to GCM Services, Inc. of Butte by Western Technology and Engineering, Inc. (WESTECH) of Helena.

A pedestrian survey was done on September 27, 1991 of the Chicago Peak Road and a 62 acre area where mine evaluation facilities will be constructed. The portion of the Chicago Peak road which was inventoried crosses from the NW 1/4 of Section 35 through the N 1/2 Section of 34, the SW 1/4 of Section 27 and into the W 1/2 of Section 33 where it joins Rock Creek road #150. The 62 acre unit of land is located in the NE1/4 NE1/4 NE1/4 of Section 34, SE1/4 SE1/4 SE1/4 of Section 27, the SW1/4 SW1/4 SW1/4 of Section 26 and the NW1/4 NW1/4 NW1/4 of Section 35. The lands inventoried include private property owned by RC Resources, Inc. and lands within the Kaniksu National Forest that are administered by the Kootenai National Forest. National Forest lands were inventoried under a Special Use Permit. The following is a report on the cultural resources inventory and assessment that



EXPLANATION

CULTURAL SURVEY ALONG RD. - 30 FT ON EITHER SIDE OF RD.

APPROXIMATE AREA OF CULTURAL SURVEY ON 30 MTR. TRANSECT SPACING

SCALE

(In Feet)

0 1200

NORTH

ROCK CREEK
EVALUATION ADIT PROJECT
SANDERS COUNTY, MONTANA
Revised January 2007

EVALUATION ADIT
CULTURAL RESOURCE SURVEY AREA

FIGURE

5

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Hydrometrics, Inc.
Consulting Scientists and Engineers

provides baseline environmental data for the permit application. Portions of the surrounding lands have been previously inventoried for cultural resources.

Lynn Fredlund was the principal investigator on the project and David Ferguson, project archeologist, conducted the records review at Trout Creek Ranger Station, conducted the field inventory and prepared the report. The field survey was conducted on September 27, 1991. All field notes, photographs and other records are on file at GCM Services, Inc., Butte. Copies of the report are filed with RC Resources, Inc., WESTECH, the Kootenai National Forest and the State Historical Preservation Office in Helena.

1.7.2 Management Summary

The records review revealed that two cultural resource inventories had been completed in the immediate area and one had recorded a historic mining site adjacent to the road corridor. The site, 24SA170, consists of four shallow prospect pits and is not considered significant (Caywood, 1986b). No other cultural heritage sites were noted on the road corridor or on the 62 acre block of land. There will be no effect on any cultural resources by the proposed mine expansion activities.

The steepness of the terrain and the lack of any flat benches or ridge tops suggest little possibility of any prehistoric sites. However, in the event that subsurface archeological materials such as firehearths, bone or stone tools are encountered during the proposed mine expansion activities, the State Historic Preservation Office or the Kootenai Forest archeologist will be contacted.

1.7.3 Physical Setting

The general project location is on the western slope of the Cabinet Mountain Range in northwestern Montana. The Cabinets are a high mountain range bordered on the west by the Clarks Fork River and on the east by the Fisher and Thompson Rivers. Much of the Cabinet Mountain range is within the Cabinet Mountain Wilderness Area, the southwestern boundary of which is just above the project area. Snort Creek and the West Fork of Rock Creek are the

main drainages in the southwestern area of the Cabinets which drain into the Clark Fork just below Noxon Dam, one of several dams along the upper Clark Fork River.

The 62 acre inventory area is on the southwestern slope of Chicago Peak overlooking the West Fork of Rock Creek. The junction of the West Fork Road and the Chicago Creek Road marks the beginning of the project. From here it progresses up a steep, clearcut slope. Talus covers about 30 percent of the inventory area.

The general area falls within the western larch-Douglas fir forest type (Payne, 1973). The surficial geology includes glacial gravels on the valley terraces with Precambrian bedrock outcrops throughout the higher elevations. The soils vary from sandy loams to clays with talus covering the slope where the project is located.

1.7.4 Methodology

Prior to field inventory, a computer search of the state cultural resource files was conducted and a review of pertinent literature relating to the area was made. The Forest Service files at the Trout Creek Ranger Station were examined for previously conducted projects. The literature was reviewed regarding other reports and work in the area, particularly the relatively comprehensive contextual data compiled by Caywood (1986a) for the initial mine permit application.

An intensive survey of all lands within the project boundaries was conducted in accordance with standard archeological field techniques. The inventory was a pedestrian survey with spacing of survey transects not more than 30 meters apart except on steep slopes. The talus slope was checked for pits or other prehistoric features. The Chicago Peak Road was walked and a corridor of 60 feet wide (30 feet on either side of the existing road) was inventoried. Photographs were taken to show the general terrain.

1.7.5 Results of Inventory

Several cultural resource inventories have been conducted in the immediate area: a small area inventories for mine exploration (Manning, 1980) and a comprehensive inventory for

the mine permit (Caywood, 1986a). Manning recorded five historic mining sites (24SA55, 56, 57, 58 and 59) in the vicinity of the present study area, none of which will be affected by the proposed project. Just outside the Chicago Peak road corridor are four shallow prospect pits (24SA170) located by Caywood (1986b). These pits were determined not eligible to the National Register of Historic Places and there will be no effect from the proposed road expansion.

No prehistoric or historic sites were found within the areas surveyed. The proposed evaluation area has been in the past and/or disturbed by recent historic activity. Mining and logging in the area began about 1910 and continued sporadically into modern times.

There were no relatively flat benches or other areas that would be potentially good locations for prehistoric sites and therefore no shovel testing was conducted.

1.8 LAND USE

The adit site falls primarily in Kootenai National Forest Management Area (MA) 14 with a small portion in MA 13. The Chicago Peak road likewise is primarily in MA 14 with some portion traversing MA 13.

The management goal of MA 14 is "to maintain or enhance grizzly bear habitat, reduce grizzly/human conflicts, assist on the recover of the grizzly bear, realize a programmed level of timber production, and provide for the maintenance or enhancement of other wildlife, especially big game" (Kootenai National Forest, Forest Plan, Volume 1, 1987). The goal in MA 13 is "to provide the special habitat necessary for old-growth dependent wildlife (usually other than big game) on a minimum of 10 percent of each major drainage on the Forest, and in units that represent the major habitat types and tree species of each drainage" (Kootenai National Forest, Forest Plan, Volume 1, 1987). Standards for USFS management are listed in the Kootenai National Forest Plan. For minerals and geology, both management areas refer to Forest Standards for locatable minerals. Forest-wide standards for locatable minerals include:

> Recognize the value and importance of the mineral resource in management activities. Road access for mineral purposes will be allowed if it is the next logical step in the development of the mineral resource, subject to statutory restrictions such as the Wilderness Act and Threatened and Endangered Species Act. Approval for Plans of Operations will include requirements designed to minimize surface impacts and reclaim disturbed sites. Such requirements shall be reasonable and justifiable. The Forest will provide guidance to the mineral industry, where possible, during the development of mining plans to minimize environmental damage and reduce cases of non-compliance from lack of knowledge of mining requirements (Kootenai National Forest, Forest Plan, Volume 1, 1987).

A spur road off the Chicago Peak road exists to the adit site. This road was constructed in conjunction with previous exploration. The spur road is currently closed to vehicle access by a dirt berm.

The adit site is a mixture of rock slopes and forest. The site has not been logged except for the spur road and drill pad site. Past and present land uses of the site include mineral exploration, dispersed recreation (primarily hunting) and wildlife habitat.

1.9 WETLANDS

A routine on-site evaluation of potential wetland components was conducted during fall 1991 to ascertain presence of hydrophytic vegetation, hydric soils and wetland hydrology. The evaluation was conducted using the 1987 Army Corps of Engineers (Corps) Manual and the 1989 Interagency Jurisdictional Manual. At the request of the Corps, a redelineation was conducted in June 2004 and the Corps verified the redelineation in August 2004. A revised 404 application was submitted to the Corps in April 2005.

Hydric soils and wetland hydrology were not present at the adit site. Although several hydrophytic species were encountered at the adit site, plant communities were not dominated by hydrophytic species. Wetlands are therefore not present at the adit site.

The Chicago Peak access road crosses several drainages that are jurisdictional waters of the U.S. Existing bridges and culverts are adequate and no fill will be placed in jurisdictional areas where bridges and culverts presently exist. As requested by the KNF, culverts will be installed on 2 or 3 ephemeral drainages on the upper portion of the road. Culvert installation would affect 0.02 – 0.03 acre of streambed currently crossed by fording.

2.0 OPERATING PLAN

2.1 INTRODUCTION

The May 1987 permit application for the Rock Creek Project proposes two main avenues of access for the Rock Creek Mine. These are the parallel service and conveyor adits and an evaluation adit to be used for mine ventilation and escapeway located outside of the Cabinet Mountains Wilderness Boundary. There is also an air intake adit included in the Plan of Operations located in the North Basin area of the Cabinet Mountains Wilderness. This plan describes the evaluation adit to be driven prior to any other work on the Rock Creek Project to gather data on hydrology and rock geochemistry and to better understand the configuration and grade continuity of the orebody.

The proposed evaluation adit would be driven prior to other work on the Rock Creek Project in an attempt to better understand the configuration of the ore body. During the mine production phase, this adit would serve as an additional ventilation (exhaust) opening and as a secondary escapeway after the two adits are connected. Conventional mining methods would be employed during the evaluation adit construction period. Existing roads will be upgraded for safety and to provide access, this plus borrow areas adjacent to roads will result in about 5.6 acres of new disturbance. Approximately 10 acres would be disturbed at the evaluation adit site and an additional 4.1 acres of disturbance would occur at borrow area, support facility and water discharge sites all located near the future tailings facility site in the vicinity of the junction of FS road #150 and Highway 200 (Table 7).

The adit portal would be located at about 5,775 feet elevation. An estimated 90,000 tons of barren rock and 88,000 tons of ore would be excavated from the proposed adit (16 to 18 feet high by 20 feet wide with an estimated length of 6,700 feet at a decline of 10 percent). Unmineralized or barren rock (developed in the first 3,000 feet of development) would be end-dumped near the portal to form a flat-topped rock patio with angle of repose slopes. Mineralized material would be placed in a stockpile near the portal for later processing when the mill was in operation. A lined storm water / mine water containment pond would also be constructed on the portal patio.

TABLE 7. ROCK CREEK EVALUATION ADIT
PROJECT DISTURBANCE AREAS

Location	Acres	Feet of Road	Totals
Adit Site			
Portal Facility	10.04		
New Road to Portal	0.17	400	
New Road at Toe of Dump	0.31	750	
Septic Drain Field	0.07		
	10.59	**1150**	**Subtotal**
Road 2741			
Realign Switchback #10 (655+00 to 659+00)	0.17	400	
New Culvert (635+75)	0.02	50	
Widen Switchback #9 (629+00 to 632+00)[1]	0.12	300	
Widen Rd Between Switchback #8 & #9	0.12	300	
Widen Rd Between Switchback #7 & #8	0.15	375	
Widen Switchback #8 (619+00 to 623+00)[1]	0.09	210	
Sediment Mitigation @Crossing 41	0.15	365	
Sediment Mitigation @Crossing 42	.016	388	
Widen Switchback #7 (586+00 to 589+00)[1]	0.12	300	
Widen Switchback #6 (555+00 to 558+00)[1]	0.08	200	
Widen Rd Between Switchback #5 & #6[1]	0.06	150	
Widen Switchback #5 (526+00 to 530+00)[1]	0.10	250	
Widen Switchback #4 & (518+00 to 521+00)[1]	0.06	150	
Widen Switchback #3 (512+00 to 515+00)	0.08	200	
Widen Rd Between Switchback #3 & #2[1]	0.27	650	
Widen Switchback #2(504+00 to 510+50)[1]	0.08	200	
Widen Rd Between Switchback #2 & #1,	0.43	1,050	
Widen Switchback #1 (481+00 to 492+00)[1]	0.06	150	
Widen Rd Between Switchback #1 and Rd 150 [1]	0.37	900	
Borrow Sources	1.10		
	3.82	**6,588**	**Subtotal**
Road 150			
Widen Segment Below Borrow Area (87+50 to 95+00)[1]	0.62	1500	
	0.62	**1500**	**Subtotal**
Borrow Area			
Increase Size of Borrow Area	0.64	0	
	0.64	**0**	**Subtotal**
Base Support Facility			
Shop, Parking, etc.	3.13	0	
Discharge Facility	1.00	0	
	4.13	0	**Subtotal**
	19.80	**9,238**	**TOTAL**

[1]Assumes a disturbance 17 feet wide times length of road.

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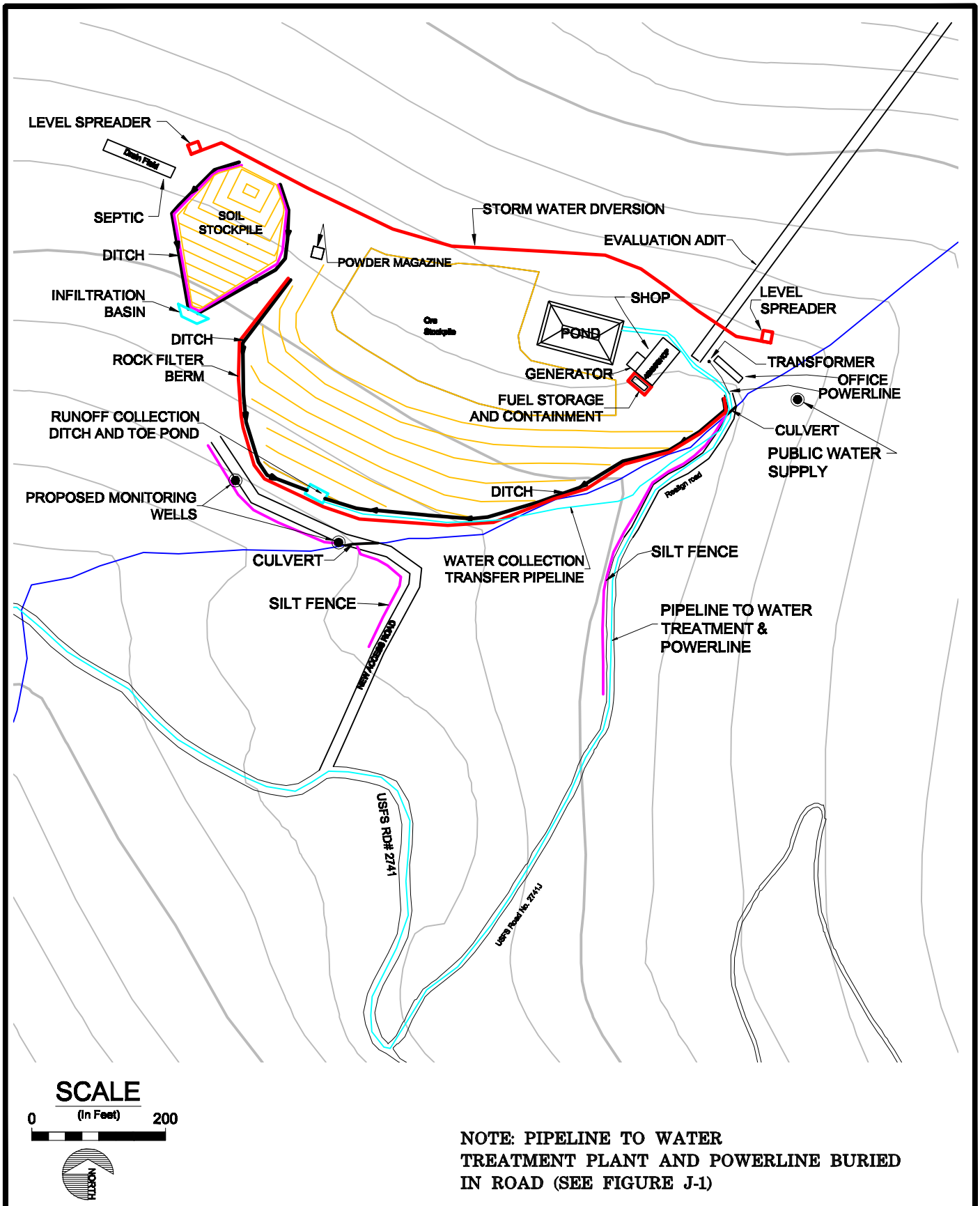
Several facilities are proposed to be constructed for the evaluation adit. Some of these facilities would be located at the evaluation adit portal site (Figure 6). A 40-foot by 80-foot temporary steel shop building on a concrete slab or trailers would be constructed on top of the initial portal patio. This building would provide warehouse space, indoor work and office space, a lunchroom, and lavatories. A 300 kW backup generator would be located at the adit site and would provide power only during periods when line power was not available. Above ground fuel tanks would be located near the shop building at the adit site. All exterior lights would be shielded or baffled from viewpoints in the Clark Fork Valley. Facility features including any permanent (life of mine) structures will be painted, stained, or modified to visually blend with the surrounding landscape and to reduce contrast with the surrounding area as defined in the Alternative V description in Chapter 2 of the FEIS. Upon completion of the evaluation adit, all facilities would be either removed from the permit area or moved to the mill site for use during mining.

Excess water from the evaluation adit and the storm water containment pond overflow would be pumped through a temporary 6-inch polyethylene pipeline to a temporary wastewater treatment system located at the support facilities site near Highway 200. This system would consist of biotreatment and/or ion-exchange systems for removal of nitrates along with precipitation and filtration for removal of metals. Discharges would comply with MPDES limits or other permit requirements established by Montana DEQ. RC Resources, Inc. would install the temporary mine water discharge pipeline between the evaluation adit and the discharge site (see Exhibit 1) by burying it in the existing road prism. This would minimize vegetation clearing and erosion on the steep hillside near the evaluation adit.

The proposed project is a 6,700 foot long evaluation decline driven as a single heading. The project will use conventional mining methods and take approximately 18 to 24 months to complete. Access would be by existing roads. Maximum personnel will be about 45 people.

Additional support facilities would be located near the junction of FDR 150 and Highway 200 (Figure 7). These include: an office situated in a trailer or other similar structure; a change house / dry set up in another trailer; a garage and warehouse located in a pre-engineered steel building on a concrete slab; the water treatment facility in a pre-engineered building on a concrete slab, lined ponds at the water treatment plant to equalize mine water prior to and following treatment,

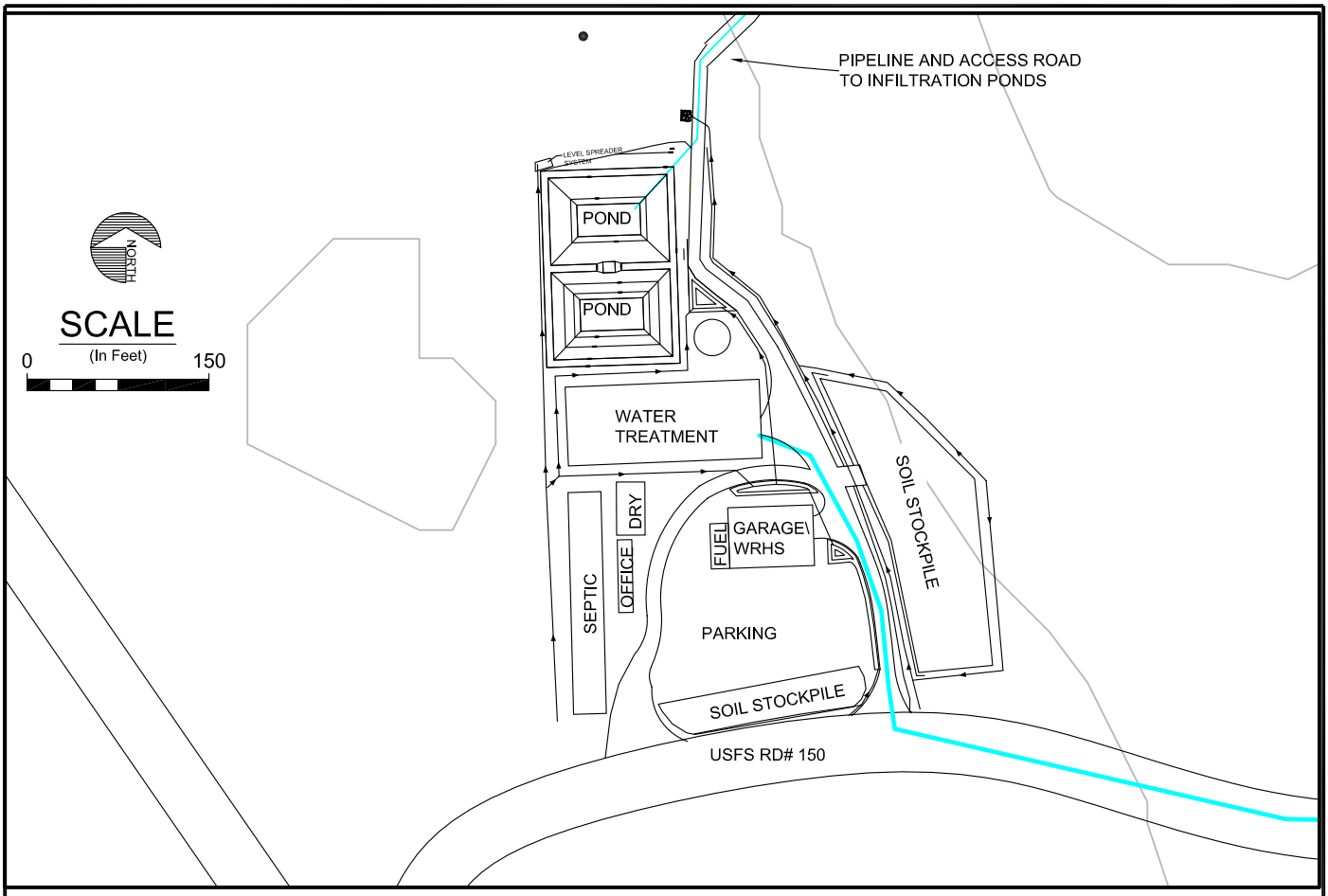


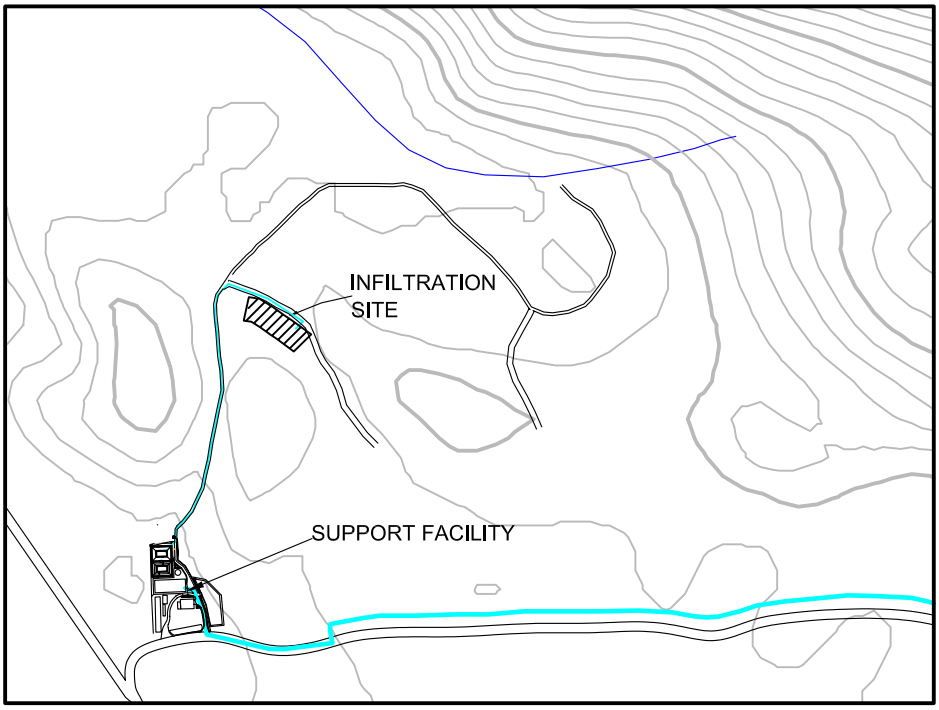
NOTE: PIPELINE TO WATER TREATMENT PLANT AND POWERLINE BURIED IN ROAD (SEE FIGURE J-1)

ROCK CREEK
EVALUATION ADIT PROJECT
SANDERS COUNTY, MONTANA
Revised January, 2007

EVALUATION ADIT FACILITIES

FIGURE
6





LEGEND

PROPOSED WATER SUPPLY WELL

WATER PIPELINE

SCALE
(In Feet)
0
1000
NORTH

ROCK CREEK EVALUATION ADIT PROJECT SANDERS COUNTY, MONTANA REVISED JANUARY 2007	**SUPPORT FACILITIES**	**FIGURE** **7**

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Hydrometrics, Inc.
Consulting Scientists and Engineers

a graded, graveled employee parking lot; and soil stockpiles. A 500-gallon above-ground fuel storage tank with secondary containment would also be located at the support facility site. The support facilities site would be supplied with electrical power from a local distribution line.

Extensive data collection, sampling and monitoring would be required during the construction of the evaluation adit. Rock geochemical characterization, monitoring and mitigations are discussed in the Acid Rock Drainage and Metals Leaching Plan in Appendix D. This plan includes provisions for barren rock handling during adit construction as well as contingency needs should premature project closure occur before mine construction and development begins. Hydrological and geotechnical rock mechanics data will also be collected (Appendix E and F). The evaluation adit data collected and evaluated through these plans will be consolidated and evaluated in the Evaluation Adit Data Evaluation Plan (EADEP) would be used to modify mine design and operations for the future project to keep impacts at or below the levels disclosed in Chapter 4 of the Final EIS.

During all operations structures, equipment, and other facilities will be maintained in a safe, neat and workman like manner. Hazardous sites or conditions resulting from operations shall be marked by signs, fenced or otherwise identified to protect the public in accordance with Federal and State laws and regulations.

The evaluation adit site is located on unpatented mining claims controlled by RC Resources, Inc. Office and support facilities will be located on RC Resources, Inc. fee land (Exhibit 1).

RCR will supply “as built” drawings of facilities as part of annual reporting to the agencies and maintain up-to-date “as builts” of project facilities on site.

The Kootenai National Forest archeologist will be notified prior to the initial phases of construction at the adit and support facilities and an archeologist will be on site to evaluate archeological resources during soil removal. The KNF archeologist will coordinate with Tribes, if necessary.

2.2 ADIT PROJECT EQUIPMENT AND FACILITIES

2.2.1 Underground

Diesel powered equipment will be used underground during the 18 to 24 month development phase for the adit. Underground equipment would use low emission engines and comply with MSHA regulations for diesel equipment. Ventilation fans would be designed to meet the requirement for noise levels less 82 dBA at 50 feet from the portal. A list showing the type and number of this equipment follows:

Unit	Number
Drill Jumbo	1
Roof Bolter	1
Loaders	1
Haul Trucks	3
Utility Vehicle	1
Lube/Utility Tractors	2
Vent Fans (Electric)	4
Pumps (Electric)	3

2.2.2 Surface

Ancillary surface equipment will be required to support the proposed project. Surface vehicles will utilize discriminating backup alarms that comply with MSHA requirements where backup alarms are required. A list of the type and number of this equipment follows:

Unit	Number
Dozer	1
Road Grader	1
4x4 Pickups	5
Crew Vans	2
Snowplow-Sander	1
Snowblower	1
Backup Generator	1

2.2.3 Soil Salvage and Replacement

Removal and stockpiling of soil at the adit site will be done with the following equipment:

Unit	Number
Dozer	1
Loader	1
Dump Truck	1

2.2.4 Additional Facilities

2.2.4.1 Support Facilities

The office, mine dry, garage/warehouse and employee parking lot would be located on RC Resources, Inc. property located near Highway 200 (see Exhibit 1). The office will be a 12 foot by 60 foot office trailer house of the type typically used at construction sites. It will be blocked and skirted in accordance with local building codes. The change house/dry will be a

trailer or prefabricated building set up similarly to the office. The garage/warehouse will be a pre-engineered steel building erected on a concrete slab in accordance with local building codes. The parking lot will be graded and surfaced with local gravel. Crews will assembly at the office/dry area and transported to the adit. This will minimize traffic on the West Fork Rock Creek and Chicago Peak roads.

2.2.4.2 Shop and Warehouse

At the adit site, trailers or a 40 foot by 80 foot temporary steel building will be constructed on a concrete slab foundation. This will provide space to maintain mobile equipment, store parts and supplies and conduct miscellaneous work in the winter.

2.3 PERSONNEL REQUIREMENTS

2.3.1 Numbers

Development of the adit will require approximately 18 to 24 months. The schedule requires one to two months to mobilize and set up, approximately 16 to 22 months to drive the adit and complete the underground drilling and one month to de-mobilize. Average quarterly employment for this period is as follows:

	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	5th Qtr
Administrative/Supervision	3	6	6	6	6
Hourly Employees	13	25	37	37	37
Total	16	31	43	43	43

2.3.2 Work Schedules

The project will work on a two shift/day, seven-day/week schedule while driving the adit. Deliveries and some administrative personnel will be scheduled for day shift, on a five days/week basis.

2.4 DEVELOPMENT PLAN

2.4.1 General

The portal of the adit will be located at an elevation of approximately 5,775 feet. The adit will be 16 to 18 feet high by 20 feet wide with an estimated length of 6,700 feet. Directional

grouting will be used to control water inflow as the adit is advanced. A decline will be driven at minus 10 percent until the mineralized zone is intersected. The remaining portion of the evaluation adit will generally follow the mineralized zone until it is within 1,000 feet of Cliff Lake, Copper Lake and the Copper Lake Fault. From the end of the adit, diamond drilling will be used to locate the fault and determine its strike and dip. Forty-foot crosscuts will be driven from the adit every 300 to 450 feet to provide turnouts for vehicle passing and space for pump installations. A 450-foot vertical buffer will be maintained between the mine workings and the surface.

2.4.2 Development Plan Details

Development drifting will utilize conventional mining methods of drilling, blasting, rock bolting, mucking and truck haulage. A pilot hole will be drilled with each round ahead of the advancing face. If substantial groundwater is not encountered, ANFO would be the primary blasting agent. If wet conditions are encountered, a water-based slurry or other less soluble explosives will be used. To minimize the effects on water quality, a concerted effort will be made to limit the use of the blasting agents to that necessary for rock breakage and to minimize spillage. If large amounts of water were encountered in the pilot hole, a packer would be installed to seal the hole followed up by directional grouting prior to advancing the adit.

Ground support will be performed with a drill designed for installing rock bolts. The adit will be bolted to provide ground support. Shotcrete and screen mesh will be used as necessary to help support areas with additional fracturing or poor ground conditions. Geotechnical data will be collected to allow evaluation of rock properties for final design of the mine (Appendix F). Mucking will be done with a loader. Broken rock will be transported from the adit by truck.

A ventilation fan will intake fresh air at the portal and blow it to the face through a vent line. In-line booster fans will be required to maintain the airflow.

2.4.3 Grouting

If pilot drilling indicates the potential for inflows of water, grouting techniques will be used to control the water while advancing the face. If large amounts of water were encountered in the pilot hole, a packer would be installed to seal the hole followed up by directional grouting prior to advancing the adit. Appendix G provides a plan for grouting during adit construction.

2.4.4 Geochemical Testing

A detailed plan for sampling and testing materials produced by the evaluation adit is contained in Appendix D. During the advancement of the evaluation adit, site geologists will classify mine rock types in lithologic and mineralologic categories. A minimum of twenty bulk samples of each rock type encountered will be archived for subsequent geochemical testing. Sample collection will attempt to be spatially representative of each rock type by spreading the samples through the intercept of mineralization type. The number of samples for each rock type to initially be analyzed for static testing (acid base accounting and total metals) is designed to provide a statistically valid evaluation.

Portions of the bulk ore collected from the evaluation adit will be used in metallurgical flotation tests as part of the evaluation of the ore body. Tailings created by these tests will be analyzed for static, kinetic, and metal mobility testing.

Test results will be utilized to confirm the results of previous extensive ARD and metals leaching evaluation. If potentially acid-generating material is identified during adit construction it will be segregated and amended if necessary. The ROD calls for placement of potentially acid generating or metals leaching materials back underground; a final plan for mitigation of any such materials will be approved by the agencies prior to implementation.

Waste and ore obtained during the evaluation adit program will need to be characterized both visually, for placement on the dump or storage piles, and by static testing laboratory analysis. Additionally, a clear definition of which materials are considered non-mineralized is needed to determine what material can be left in the portal patio. All ore zone and disseminated

galena, pyrite and chalcopyrite halo zone rock will be considered mineralized and will be stored on the portal patio pad. Ore and halo zone material will be determined by the site geologist and considered "mineralized".

Non-acid generating material has been defined as having an NP:AP ratio greater than 3:1 or for materials with NP:AP ratios of 1:1 to 3:1 "…where kinetic testing and sample classification indicate acceptable drainage water quality" (SRK, 1992). Much of the waste rock from the evaluation adit is expected to fall in the latter category (NP:AP ratios of 1:1 to 3:1). Kinetic and additional testing of Rock Creek waste rock was conducted for the Forest Service by Maxim (2003). The Maxim report characterizes material with NP:AP ratios of 1:1 to 3:1 as "uncertain potential" and further indicates that rock with total sulfide contents below 0.3% should be considered non-acid generating. Although the 0.3% cutoff would make nearly all of the Rock Creek waste rock non-acid generating, Maxim concludes that additional sampling and kinetic testing of the various waste rock types during the evaluation adit phase and mine development is warranted. The FEIS (Volume I, page 4-28) also offers a definition of non-acid generating to be where NAG testing (Miller, 1998) results in a final pH above 5.0 or 6.0.

Rock with a NP:AP ratio less than 1:1, NAG pH less than 4.5 (Morrin and Hutt, 1999) or with sulfide mineral content greater than 0.3% would be considered potentially acid generating (PAG).

Metals leaching (ML) material is not clearly defined in the literature, although the ROD references a definition in Chapter 3 of the FEIS as "potential metal mobility in near-neutral pH environments". As described in the ARD and Metals Leaching Monitoring Plan (Appendix D), leachability testing will be conducted using the EPA Synthetic Precipitation Leaching Procedure (SPLP) (EPA Method 1312) on each of seven rock types that will be encountered during adit development: upper, middle, and lower Revett formation rock, pyrite halo zone rock, galena halo zone rock, chalcopyrite halo zone rock, and ore. Parameters selected for testing include antimony, arsenic, barium, chromium, copper, lead,

manganese, and zinc. Leach test results will be used in conjunction with the static testing to determine suitability for use in the portal pad. The SPLP results are intended only to indicate which, if any, metals parameters may leach from waste rock materials under near-neutral pH conditions, and are not intended to be predictive of the geochemical behavior of individual parameters under field conditions.

Since there are no regulatory or otherwise generally accepted criteria for leachate concentrations that define a material as metals-leaching or non-metals-leaching, criteria are proposed for the Rock Creek Evaluation Adit project based on an estimate of potentially significant leachate concentrations. The following procedure was used to develop the proposed criteria listed in Table 7A:

- Water quality criteria for each of the ML testing parameters were obtained from Montana Circular DEQ-7 (February 2006 Version). For parameters with multiple water quality criteria (i.e., both human health and aquatic life standards), the lowest standard was selected. Chronic aquatic life criteria for the hardness-dependent metals copper, lead, and zinc were calculated for a hardness of 50 mg/L as $CaCO_3$. This hardness corresponds to a water with a calcium concentration of 10 mg/L and a magnesium concentration of 6 mg/L.
- The water quality criteria were multiplied by a factor of 10 to yield a concentration in leachate of potential environmental significance. This factor of 10 is intended to account for processes that would act to reduce metals concentrations during transport away from the waste rock pile, including adsorption and/or precipitation and dilution.

The potentially significant leachate concentrations listed in Table 7A will be compared with SPLP results for each rock type. If the SPLP results exceed these criteria, the rock type will be considered to be potentially metals leaching and handled accordingly.

TABLE 7A. PROPOSED METAL LEACHING (ML) CRITERIA FOR ROCK CREEK EVALUATION ADIT

Metal	DEQ-7 WQ Criteria	Basis	Potentially Significant Leachate Concentration (mg/L)
antimony	0.0056	Human Health Standard	**0.056**
arsenic	0.010	Human Health Standard	**0.1**
barium	2.0	Human Health Standard	**20**
chromium	0.1	Human Health Standard	**1**
copper	0.0052	Chronic ALS (hardness = 50)	**0.052**
lead	0.0013	Chronic ALS (hardness = 50)	**0.013**
manganese	0.05	Secondary MCL Guidance Value	**0.5**
zinc	0.067	Chronic ALS (hardness = 50)	**0.67**

The data for Evaluation Adit samples will be submitted in quarterly reports to the agencies. Kinetic testing of samples will be done for all samples with net neutralization potential less than 30 tons $CaCO_3$/1,000 tons rock. A detailed description of the geochemical testing and reporting program is provided in Appendix D.

2.4.5 Portal Patio and Ore Storage

Approximately 178,000 tons of material will be excavated from the proposed adit. This would have a volume of about 132,000 cubic yards on the surface. It is estimated that 88,000 tons will come from the mineralized zone and 90,000 tons will be barren. As the adit advances, an ongoing sampling and assaying program will be instituted to determine whether the material is barren or mineralized material. Barren material will be end-dumped and graded to form a flat-topped rock patio with angle of repose slopes.

The material excavated from the mineralized zones will be placed in a stockpile on top of the patio near the portal. The barren rock material will be sprinkled for dust control if conditions warrant. From RC Resources' experience at the Troy Mine, the possibility of nuisance dust will be low due to the nature of the broken rock. After the rock has been broken underground, the muck pile may be sprinkled prior to loading and hauling. Most of the fine dust size material will be washed off and collected in the underground sump during this phase.

2.4.6 Temporary Shut-Down

In the case of a temporary shut-down, other than a seasonal or short term cessation due to access conditions or weather or fire, an annual statement will be filed with the KNF that includes a verification statement indicating an expected reopening date and estimated duration of the shut-down.

2.5 SPECIAL SYSTEMS

2.5.1 Access Roads

The locations of the adit, office and associated access roads are shown on Figure 6. Because this adit will be driven before any other work on the overall project, existing Forest Road No. 150 and the Chicago Peak road will be used for access. The minimum work necessary to provide year round access will be conducted on the Chicago Peak road as part of the mobilization process. This work will be done in consultation with the USFS.

Approximately 2.5 miles of road improvements plus reopening road 2741J will be required for access to the evaluation adit site. These proposed road modifications are almost entirely within the existing road prism and would include resurfacing a number of road sections to improve trafficability and reduce sediment yield, adding new culverts at five locations where Forest Road 2741 crosses drainages, widen corners on 10 switchbacks to allow truck access and modify or add cross

drains (rolling dips) to meet Forest standards and Montana forest road Best Management Practices. Location of proposed road modifications are shown on Figure Q-1 (Appendix Q), summarized in Tables Q-1 and Q-2 and described in more detail in Appendix Q. Road locations will be staked in the field for agency review.

The office, dry and employee parking will be located on RC Resources fee property in lower Rock Creek. This will limit traffic to the minimum number of vehicles needed to transport men and supplies to the adit.

Because of the year long schedule, it will be necessary to plow snow during the winter. This will be accomplished with a snowplow-sanding truck assisted by a road grader, dozer and snow blower when necessary. Snow removal and disposal will follow USFS guidelines. Snow removal is described in Appendix L.

2.5.2 Water Supply and Use

Water requirements for driving the adit will average 30 gallons per minute during the drilling cycle. Some additional water may be needed for dust control in the adit if conditions warrant. A small amount of potable water will also be needed for the lavatory and lunchroom in the shop.

Mine water will initially be hauled to the site. A lined pond will be constructed near the portal to collect site runoff, store hauled water and contain adit water. The adit site surge storage capacity would ultimately be on the order of 600,000 gallons. This would require a pond approximately 80 feet by 130 feet (Figure 7A) or underground storage capacity, although a smaller pond or tank would initially be used at start-up for make-up water. A barrier will be erected to exclude wildlife. Figure 6 shows the pond in relation to the adit portal area.

A pump in this pond will provide mine water during the initial construction. If water is encountered in the adit during this phase, it will be pumped to this pond to reduce hauled water needs. After the adit has advanced approximately 350 feet, a sump will be excavated at that point to function as the main mine water sump. Water will be pumped from the face to this sump for the main mine water supply.

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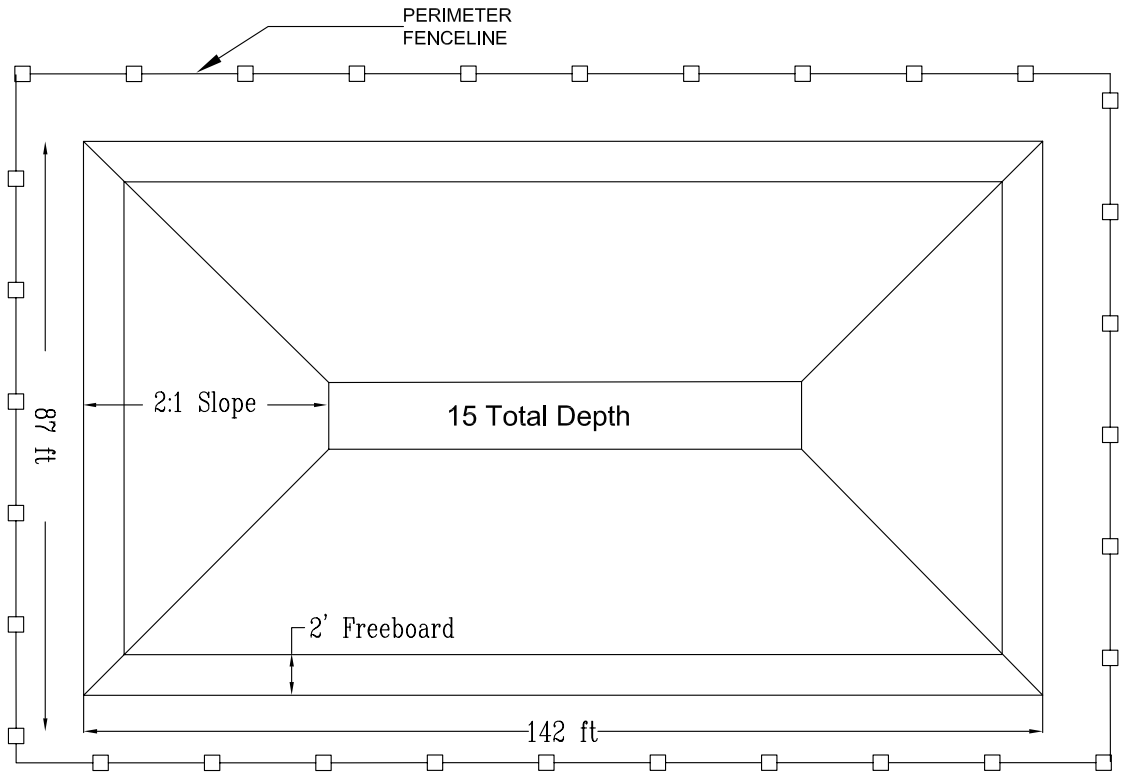
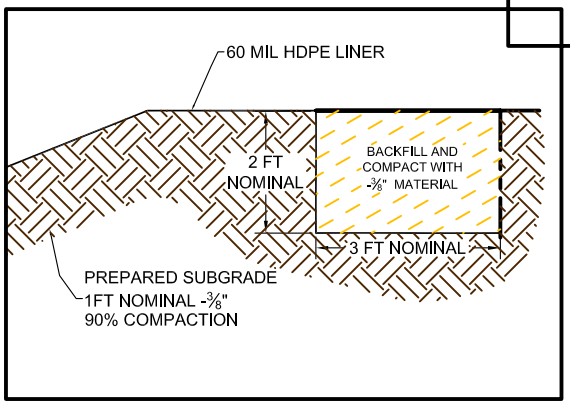
POND AT EVALUATION ADIT PORTAL NOT TO SCALE





LINER AND KEY TRENCH DETAIL NOT TO SCALE

Hydrometrics, Inc.
Consulting Scientists and Engineers

AUGUST 2006

ROCK CREEK EVALUATION ADIT PROJECT SANDERS COUNTY, MT	**ADIT FACILITY SURGE POND**	**FIGURE** **7A**

Water in excess of the requirements for adit construction will be pumped to the portal where it will enter the pipeline to the water treatment. The temporary pipeline will be a 6-inch diameter high density polyethylene pipeline from the portal to the water treatment plant (Figure 8). The pipeline will be buried in the access road for protection. The pipeline will cross Rock Creek in two locations. The pipeline will be jacked or drilled under the streams. A more detailed description of the pipeline installation is contained in Appendix J. Placement of the pipeline in the existing road will minimize new disturbance.

Wells will be installed to supply potable water at the adit and support facility sites. If an adequate supply cannot be found at the adit site water will be trucked to the adit site and stored in a tank in the shop until a suitable source is found in the adit. Sewage from the lavatory in the adit shop will report to a conventional septic tank and drainfield system (Appendix H). Sewage from lavatories in the office and from the mine dry at the support facility will report to a septic tank and drainfield (Appendix I).

Estimated mine water inflow without grouting would be on the order of 112 to 168 gallons per minute at completion of the adit. A horizontal diamond drill hole drilled 1,420 feet near the adit location produced less than 5 gallons per minute.

2.5.3 Water Treatment and Disposal

The mine water should be of generally good quality with the possible exception of elevated nitrates. The estimated quantity and quality of this water has been evaluated in detail the FEIS and MPDES permit process. A detailed description of the water treatment system is contained in Appendix J.

During Operations excess mine water and storm water runoff captured in the lined pond at the portal and will be routed through the pipeline to a lined surge pond adjacent to the water treatment plant (WTP) in the support facility site. The dimension of the surge pond will be approximately 80 feet by 65 feet with a capacity of about 300,000 gallons. A barrier will be erected around the WTP ponds to exclude wildlife.

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NORTH

SCALE
(In Feet)
0 2500

ADIT

ACCESS ROAD

CULVERT CROSSING

BRIDGE CROSSING

BRIDGE CROSSING

INFILTRATION PONDS
PIPELINE TO INFILTRATION PONDS
WATER TREATMENT PLANT
SURGE PONDS

PIPELINE FROM PORTAL

POTENTIAL DISCHARGE
PIPELINE TO MPDES001

Hyway 200

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ROCK CREEK
EVALUATION ADIT PROJECT
SANDERS COUNTY, MONTANA
REVISED MARCH, 2006

EVALUATION ADIT PIPELINE AND WATER TREATMENT PLANT

FIGURE
8

The water treatment plant will employ multiple treatment processes that remove oil and grease, suspended solids, metals, and inorganic nitrogen (ammonia and nitrate). The effluent from the water treatment plant will be of a quality that meets or exceeds groundwater quality or MPDES discharge requirements. The water treatment plant will employ precipitation/ clarification and filtration for solids and metals removal, biological nitrification/de-nitrification and ion exchange for removal of inorganic nitrogen. Solids will be de-watered, with the water portion routed back through the treatment plant. The dewatered solids will be placed in the barren waste area at the portal patio or disposed of in an off-site approved landfill. The solid waste will not contain leachable metals.

The treated water will either be discharged to a groundwater disposal area near the support facilities or be directed to the Clark Fork River and discharged in accordance with the MPDES permit. If the Clark Fork discharge is not used, evaluation of the diffuser discharge on bull trout (required as a stipulation in the ROD) will be incorporated into the mine startup phase. A proposed groundwater disposal site consisting of percolation ponds within the tailings impoundment footprint is shown on Figure 6; details of the groundwater discharge site are in Appendix O. A temporary buried HDPE pipeline will be used to convey the treated water from the treatment facility to the selected discharge location, access to the site will be by an existing road.

Following completion of the exploration project and depending on results of the adit water monitoring programs, water will be allowed to flood the adit or may continued to be pumped depending on the schedule for mine development. If water continues to be pumped, it will be treated and discharged in accordance applicable requirements and permit standards. A decision to allow adit flooding will include consultation between the agencies and RCR.

2.5.4 Fuel Storage

Most of the underground equipment will be electric or diesel powered. Electricity for the ventilation fans and pumps will be supplied by line power. The equipment fleet will require a large fuel storage tank at the adit site. Tank(s) with approximately 10,000 gallons of capacity will be located near the shop building at the adit site. Liquid fuel tanks greater than 55-gallon capacity would all be double walled or located within a membrane lined area to provide secondary containment (Figure 8A).

A 500-gallon tank will be located at the support facilities on lower Rock Creek. This tank will also have secondary containment.

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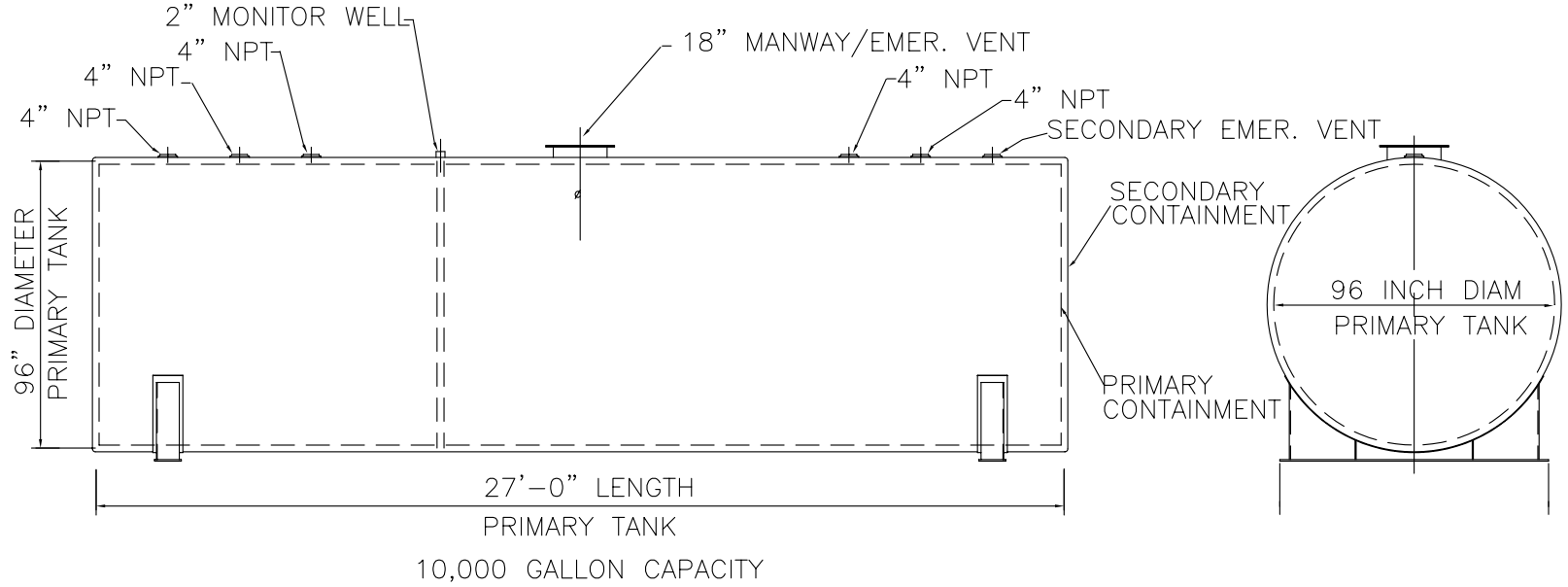

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ROCK CREEK EVALUATION ADIT PROJECT SANDERS COUNTY, MT	**DOUBLE WALL HORIZONTAL ABOVE GROUND 10,000 GALLON FUEL STORAGE TANK**	**FIGURE** **8A**

2.5.5 Power Supply and Use

A 13.8 kV three phase electrical power will be supplied to the site beginning in the vicinity of the Adit support facilities located near Highway 200. The 13.8kKV power line to the adit site will be buried in the same trench as the water line in the existing Forest Service road (see Figure J-1); this line will be a standard insulated shielded underground cable. Where the power line and pipeline cross under the streams, they will be contained inside a larger protective casing with the powerline inside a separate conduit. Where the line reaches the adit site, it will be stepped down from 13.8kV to 480V in a transformer located near the portal (Figure 6). From the transformer location electrical power will be supplied to the office, shop and underground as needed. During the adit development phase, a backup generator will provide power for the drills, pumps, vent fans and shop in the event the line power is disrupted.

Power for the support facility site will be supplied by the local utility through an existing powerline.

2.5.6 Solid Waste Disposal

All solid waste will be disposed of in accordance with rules and regulations of the Solid Waste Management Bureau, Montana Department of Health and Environmental Sciences. Inert wastes (such as wood, steel and concrete) will occasionally be buried at the site in the portal patio. All other wastes will be trucked to an approved county landfill or a recycler. No hazardous wastes will be disposed of at the site. All refuse will be properly disposed. Bear-proof containers will be installed at both the adit and support facilities to hold garbage and other attractants. Garbage containers will be emptied weekly, or more often if monitoring shows they are becoming attractive to bears.

2.5.7 Fire Protection

Fire protection will be typical of a construction project, primarily relying on fire extinguishers. During the summer forest fire season, USFS guidelines will be followed. RCR will require employees, contractors and subcontractors to comply with all applicable Federal and State fire laws and regulations and shall take all reasonable measures to prevent and suppress fires in the area of operations.

2.5.8 Stormwater Control

The intent of the storm water controls is to either divert storm water runoff around disturbed areas or to collect runoff for sediment removal. The majority of storm water runoff at the site will be controlled by diversion around disturbed soils. Drainage structures will be sized to safely convey the 24-hour, 100-year storm event under average antecedent moisture conditions. Diversion structures will consist of drainage ditches or swales, spreaders, sediment traps, rock berms and slash windrows.

A diversion ditch around the upper side of the adit site will be used to divert storm water from the undisturbed areas around the site. Drainage from the surface of the portal patio and around the shop will be routed to the lined pond and will be treated through the water treatment plant before discharge. Runoff from the dump slope will be captured by a lined ditch system at the toe of the slope (Figure 6). Water captured in the toe ditch will flow to a sump or sumps and be pumped back to the pond on the patio for transfer to the water treatment plant. The downhill side of the toe ditch will consist of a rock berm and slash windrow to treat stormwater from the berm.

The runon diversion ditch above the adit site will collect runon and divert it to both sides of the adit patio. Where the diversion outlets meet undisturbed ground energy dissipation or spreaders will be constructed. The spreaders will convert the flow concentrated in the diversion to sheet flow and discharge it over an erosion blanketed lip to an undisturbed area at non-erosive velocities. The spreaders will be located such that the discharge water will not be collected by the down-slope berms or concentrated in down-slope channels. Spreaders will be sized according to the recommendations of the Environmental Protection Agency (EPA, 1976) and the Soil Conservation Service (Soil Conservation Service, 1975). If site conditions determine that the spreaders are not appropriate for the site, down-slope drainage channels and energy dissipating outlets will be specified.

A dual purpose rock berm will be constructed below the adit patio to prevent excessive rock roll-down as well as divert surface runoff from the dump to collection sump at the toe of the slope. Sediment carried from the adit patio slope by storm water runoff will be periodically removed from the ditches and sump(s).

All storm water controls will be constructed prior to or in conjunction with tree removal and soil stockpiling. All storm water controls are passive systems that require regular inspection for eroded areas and build-up of sediment in the slash windrow or sediment traps. With proper maintenance and inspection, each storm water control can remain in operation until completion of the evaluation adit and subsequent stabilization and revegetation of disturbed areas.

The portal patio will be sloped to direct drainage from the patio surface to the lined pond and all storm water collected in the pond will be treated in the water treatment plant before discharge.

2.5.9 Vegetation Management

Modified right of way clearance measures and a vegetation management plan as described in the Alternative V description in Chapter 2 of the FEIS will be utilized for vegetation clearance.

2.6 MONITORING AND MITIGATION PLANS

A number of monitoring and mitigation plans were specifically required by the Record of Decisions approving the Rock Creek Project. Most of these items were a part of the original evaluation Plan, but have been modified or expanded by the agency decisions. This section summarizes and/or indicates where those plans are located in this Plan.

2.6.1 Wildlife and T&E Species

Wildlife monitoring and mitigation is required by the Biological Opinion and the ROD. Grizzly bear mitigation is also addressed in an MOU between the agencies and RCR. Appendix K summarizes the wildlife monitoring and mitigation plans for grizzly bear, fisher and wolverine, mountain goat and harlequin duck.

2.6.2 Transportation

A transportation plan that is intended to minimize traffic to the adit site and meet requirements of the ROD stipulations is contained in Appendix L.

2.6.3 Ore and Waste Geochemistry

A geochemistry monitoring plan that will provide additional data to confirm results of earlier evaluations is in Appendix D. Analysis of lab and bulk samples of tailings created from extracted ore during evaluation adit construction will be compared to the Troy tailings. Some samples amended with cement or other additives will also be tested. Tests will be conducted to determine if additives are necessary to modify the potential geochemical behavior to avoid adverse leachate to surface or ground waters.

2.6.4 Aquatics and Fisheries

The Biological Opinion and ROD stipulations require a fisheries monitoring and mitigation plan which is presented in Appendix M.

2.6.5 Geotechnical

Appendix F contains a geotechnical testing and monitoring plan that will provide data for mine design and evaluation of subsidence potential.

2.6.6 Water Resources

The water resources monitoring plan including surface water, groundwater, seeps and springs is described in Appendix E. Water monitoring will be conducted by a qualified third party contractor. RCR will work with DEQ and KNF to develop an MOA that will describe the process of selecting and funding a third-party contractor in amounts equal to RCR's costs for the required water quality monitoring. All RCR's required water-quality monitoring will be accomplished through implementation of this agreement as outlined in Appendix E. Mine drainage and tailings seepage water quality data from the Troy Mine will continue to be collected for comparison purposes to help determine if there could be potential unanticipated long-term water quality impacts at Rock Creek.

2.6.7 Sediment Mitigation

The RODs for the Rock Creek mine stipulate that mitigation measures be employed to reduce stream sedimentation. The agency evaluation of sediment production and mitigation for the Rock Creek Mine (Appendix N of the FEIS – MDEQ & USFS, 2001) includes a number of assumptions and factors of safety to arrive at a suggested mitigation of 400 tons per year sediment. The agency analysis using the R1-WATSED model did not differentiate the evaluation adit phase from the complete mine. In order to scale the mitigation requirement for the evaluation adit phase the Forest Service has suggested that the ratio of disturbed area between the two project phases be used (Steve Wegner, 2005).

The total disturbed area for Alternative V used to calculate the 400-ton mitigation requirement is 482 acres. The disturbed area associated with the evaluation adit is about 19.8 acres as summarized in Table 7. The ratio of disturbed area of Alternative V to the disturbed area of the evaluation adit phase would result in a needed sediment reduction of 16.4 tons per year. The proposed sediment mitigation for the evaluation adit phase is a 54.9 tons per year reduction over current conditions. This provides a significant buffer over the sediment reduction increment required for the evaluation adit phase.

Current sediment load, potential sediment increase from evaluation adit activities and proposed mitigation measures to reduce sediment load were estimated using a model developed by the Washington State Department of Natural Resources Forest Practices Board. The approach developed in Washington includes extensive guidelines to be used by forest

managers. These guidelines are published in the Washington Forest Practices Board Manual, the "Board Manual" (1997).

In Montana, the Washington Forest Practices Board method ("the Washington Method") for estimating road surface erosion and sediment delivery has been used in a variety of assessments to evaluate road surface erosion and sediment delivery to streams. The Washington Method has been applied to road assessments in Montana by the U.S. Forest Service, Plum Creek Timber Company and Montanan Department of Environmental Quality in the development of TMDLs for impaired streams. Example TMDL/water quality restoration plans in Montana which have used the Washington Method for assessing road surface erosion and delivery include Ninemile Creek, Swan Lake, Middle Blackfoot River, and Nevada Creek.

Model Parameters

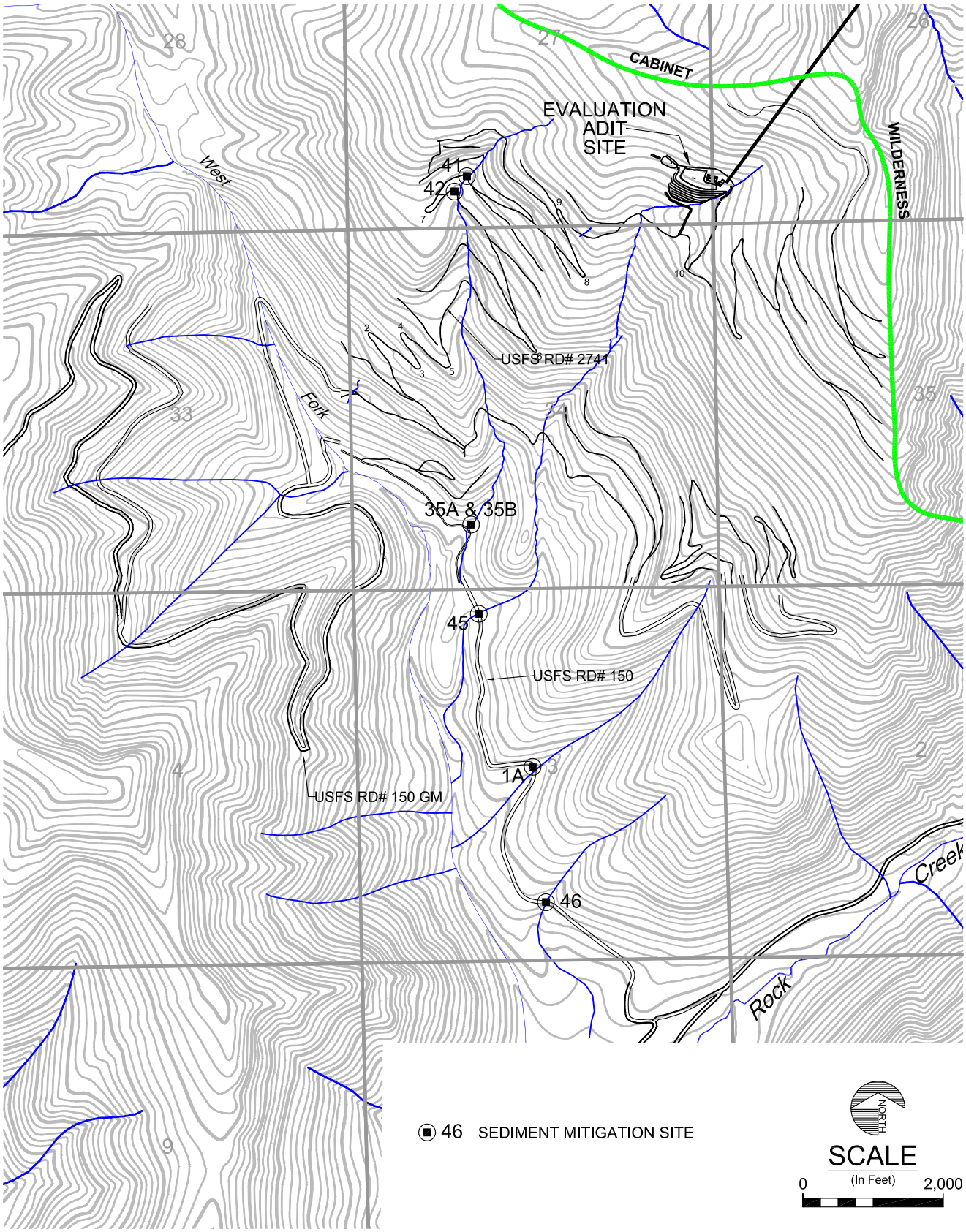
The primary measurements to be collected for quantifying road surface erosion and sediment contribution at stream crossings according to the Washington Method include:

- **Contributing Road Tread**
  - Number of sides (left approach and/or right approach)
  - Tread length
  - Tread width
  - Road grade (%)/slope factor
  - Surface type/factor
  - Percent cover/cover factor
  - Traffic factor
  - % Delivery
- **Contributing Cutslope**
  - Cutslope length
  - Cutslope width
  - Percent cover/cover factor
  - % Delivery

- **Contributing Fillslope**
  - — Fillslope length
  - — Fillslope width
  - — Percent cover/cover factor
  - — % Delivery

These data were collected for roads in the in Rock Creek drainage the 2005 field season. The model estimates approximately 379 tons annual stream sedimentation from roads # 150 and # 2741 under current conditions (see Appendix N). The model further estimates an additional 1,415 tons of sedimentation would occur due to additional mine-related traffic on these roads if no mitigation is employed. Mitigation proposed by RCR at select stream crossings (Figure 9) will reduce sedimentation to approximately 324 tons annually, or 55 tons less then current conditions. Proposed sediment reduction measures are listed in Table 8 and include the following:

- Installing water diversion structures (rolling dips, open tops, or rubber flaps) to comply with Montana Best Management Practices (MSU, 2001). Structures will be constructed per USFS design standards.
- Sediment delivery mitigation in the form of slash filter windrows or settling basins will be installed at the outfall of each newly constructed water diversion structure.
- Two new culverts will be installed on the Chicago Peak Road (USFS Rd# 2741) at current stream ford locations. Culvert size and installation details will be finalized with USFS engineering staff.
- A new 4”-6” gravel surface will be applied to road segments between the new diversion structures and stream crossings.



ROCK CREEK EVALUATION ADIT PROJECT SANDERS COUNTY, MT REVISED JANUARY 2007	**SEDIMENT MITIGATION SITES**	**FIGURE** **9**

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TABLE 8. SEDIMENT MITIGATION SITES

	Gravel	Water Bars		Delivery Mitigation				Crossing Upgrades		
	Tread Length (ft)	Quantity		Cut Slope Side (Qty)		Fill Slope Side (Qty)		Existing Structure	Upgraded Structure	
Site	L	R	L	R	L	R	L	R	Type	Upgrade	Width (ft)
1A	38	250		1	1	1					
35A	125	250		1	1	1		1			
35B		160				1					
41	30	250		1	1	1		1	ford	New	5-13*
42	250	53	1		1	1		1	ford	New	5-13*
45	91	250		1	1	1	1	1			
46		250		1		1	1	1			
Sub-Total	534	1463	1	5	5	7	2	5			
Total	**1997**	**6**			**12**		**7**		**2**		

*Needs to be field reviewed to determine/verify bankfull width.

3.0 RECLAMATION PLAN

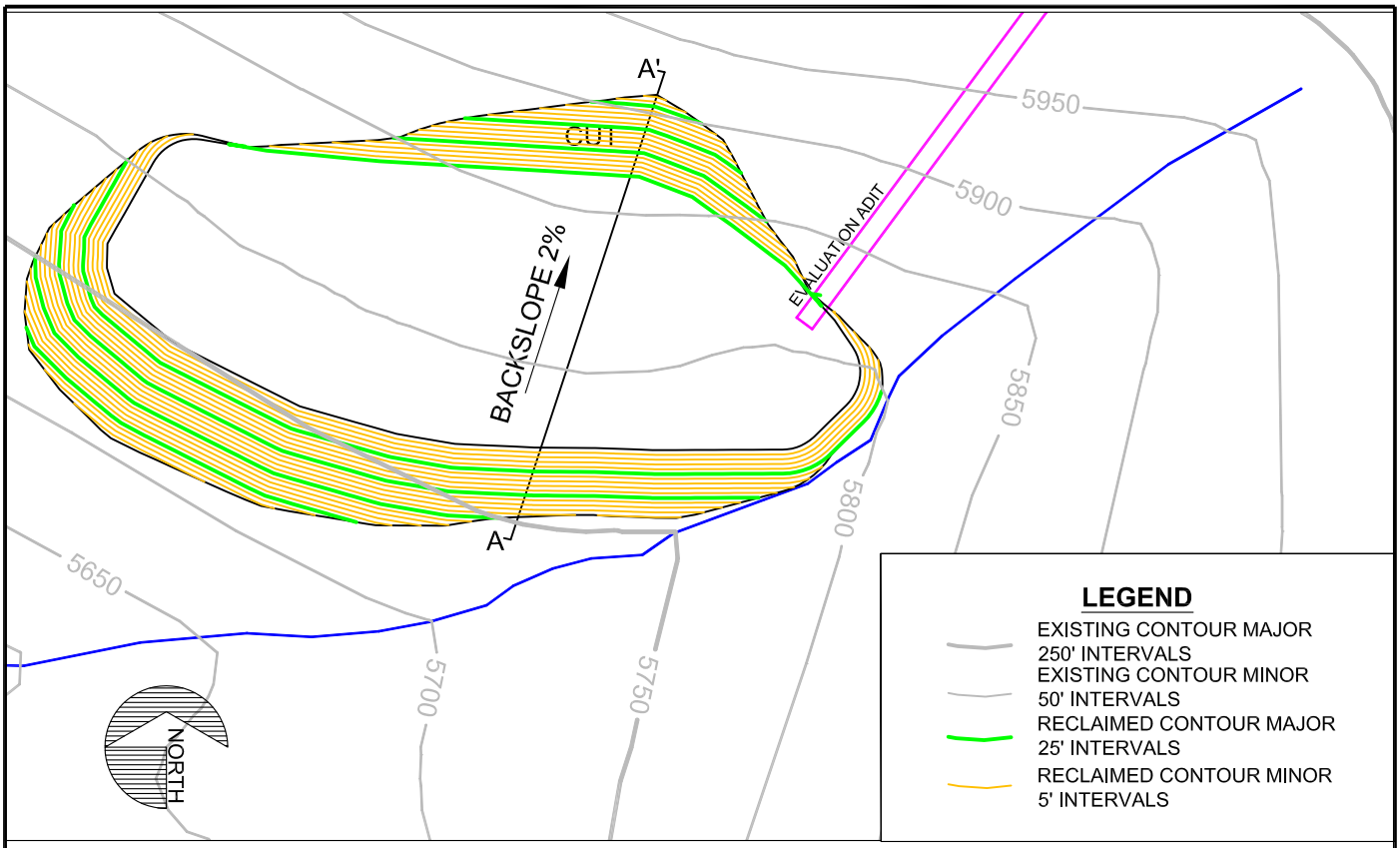
The evaluation adit program is intended to provide data that will determine the feasibility and certain design features of the Rock Creek Mine. As outlined in the Final EIS and ROD, the evaluation adit will develop data to allow the agencies to determine if the current analysis is supported. If development of the Rock Creek Mine goes ahead following completion of the evaluation adit, the adit will remain in place for the duration of the mine to provide ventilation and a required secondary escapeway. Facilities not needed at the adit site would be removed and the ore would be hauled to the mill once it was constructed. The adit would remain fenced and open, but most of the patio and fill slope could be re-soiled and revegetated. If after consideration of the information collected during the evaluation adit it is decided not to proceed with the mine, the ore stockpile would be backfilled into the adit and the adit would then be reclaimed. The following description of the evaluation adit reclamation is focused primarily on final reclamation of the adit site following mine closure. Concurrent and interim reclamation will be implemented as soon as practical to reduce the amount of unvegetated area.

3.1 POST OPERATION LAND USE

Post operation land use at the adit site will be primarily wildlife habitat. The Chicago Peak Road will remain for public access. Post operational use at the support facility will be commercial/industrial and the buildings will be maintained at the site.

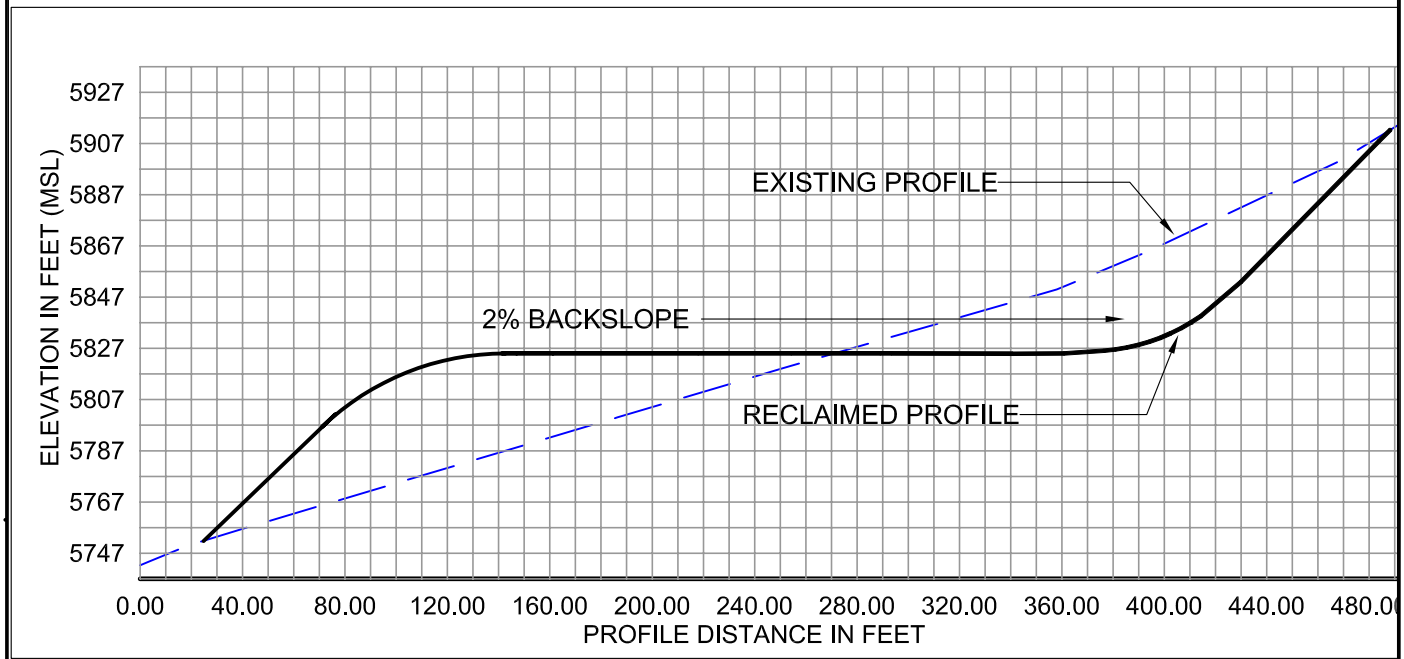
3.2 POST-OPERATION TOPOGRAPHY AND GRADING

The portal patio will be constructed with the fill slope at the angle of repose. Mineralized material will be placed on top of the barren rock. After removal of the ore from the patio surface, the top of the portal patio will be backsloped at two percent. The edges of the fill slope face will be graded to blend with surrounding topography, and portions of the slope will act as an extension of the existing scree field upslope (Figure 10). The channel along the east end of the portal patio will be maintained to connect natural drainage areas above and below the portal patio.



PLAN VIEW

SCALE:1"=200'
ADIT SITE



SECTION A-A'

SCALE:1"=75'
ADIT SITE

ROCK CREEK EVALUATION ADIT PROJECT SANDERS COUNTY, MONTANA	**POST MINING TOPOGRAPHY**	**FIGURE** **10**

Disturbances other than the portal patio (support facilities area, diversion ditches, fuel storage area, etc.) will be graded to blend with adjacent undisturbed topography. The support facility is largely flat and will require little if any regarding at closure. The support facility site will be reclaimed by removing the water treatment facilities and filling the ponds.

3.3 SOIL HANDLING AND CLEARING

3.3.1 Vegetation Management, Removal and Disposition

Disturbance will be minimized during clearing and construction activities. Cutting unit boundaries will be clearly marked and the edges of the permit boundary will be staked. Qualified personnel will be retained to ensure that these boundaries are not exceeded.

Commercial timber will be harvested and removed per U.S. Forest Service timber removal protocols. Non-commercial timber and slash from timber clearing operations will be salvaged for use in soil protection wherever possible. Large or whole pieces may be used as physical barriers and catchments below the waste rock dump and access road fill slopes; ground-up slash would be used as mulch or as an additive to stored topsoil. Large or whole pieces could also be used to enhance or create desirable fisheries habitat in the larger permit area according to aquatic/fisheries mitigation plans. All mulching materials will be certified weed-seed free.

The remainder would be removed, burned or chipped and stockpiled for later use. Storage sites would be carefully selected to prevent off-site impacts from the production of low-quality organic acids as the materials decay.

3.3.2 Soil Salvage

The suitability of soils proposed for reclamation was determined from physical and chemical data collected during the baseline soil survey (see Section 1.4). Physical data evaluated included depth, percent slope, saturation percentage, texture, permeability, organic matter content and coarse fragment content. Chemical data included pH and electrical conductivity.

Soil salvage quantities are limited by slope, shallow depth to bedrock and exposed bedrock at the adit site. Slopes over 50 percent are considered unsafe for conventional salvaging

techniques. Due to shortage of cover soil, soils containing coarse fragments in excess of 50 percent by volume will be salvaged for use in reclamation.

From all areas to be disturbed, soil materials will be salvaged in two lifts where practicable, where soil is available and where slopes are less than 50 percent. First and second lift soil salvage depths, acreages, volume and associated stockpiles for the adit site and portal patio are listed by map unit in Table 9. First and second lift soils will be segregated, stored and signed in stockpiles adjacent to the disturbances designated for soil redistribution to facilitate replacement of appropriate soils. Location of the soil stockpile areas are shown on Figures 6 and 7.

Prior to soil salvage operations, shrubs and trees will be cleared. Woody vegetation will be retained for use in slash windrows for erosion control. Soil materials will be salvaged using dozers, front-end loaders, or tracked excavators as dictated by site conditions. Every effort will be made to minimize compaction during soil handling operations. To the extent practical, soil will be handled only when it exhibits good tilth and is moderately dry. Direct haul of topsoil will utilized be maximized to the extent practical to retain soil structure and allow for germination of existing seeds.

TABLE 9. ROCK CREEK EVALUATION ADIT – SOIL SALVAGE VOLUMES BY MAPPING UNIT

Disturbed Soils	Salvage Depth (inches)		Total Disturbance and Salvageable Area (acres)	Salvageable Soil Volume (yd^3)	
	Lift 1	Lift 2		Lift 1	Lift 2
Adit Site					
C2a	6	30	2.84	2290	11449
C2b	6	30	0.17	136	679
C2c	6	30	0.84	683	3416
Pa	5	0	0.01	5	0
P-RO, a	5	0	0	0	0
P-RO, b	5	0	0	0	0
P-RO, c	5	0	0.30	203	0
Tb (Talus)	0	0	2.05	0	0
Tc (Talus)	0	0	2.77	0	0
RO	0	0	0.09	0	0
Adit site total				3318	15545
Support Facilities					
F	7	12	2.33	2193	3759
L	11	13	1.00	1479	1748

3.3.3 Soil Storage and Protection

First lift and second lift soils will be stored in separate stockpiles at both the adit and support facility sites. Piles will be signed. Stockpiles will be constructed with 2.5h:1v side slopes and 3h:1v ramps. The estimated life of each stockpile is the life of the adit. Soils will be stockpiled and signed separately according to erodability to facilitate replacement of appropriate soils according to reclaimed slopes.

Soil stockpiles will be incrementally stabilized to minimize erosion and loss of soil. The stockpile surface will be loosened if necessary to provide a proper seedbed. Broadcast seeding will be conducted during the first appropriate season following stockpiling. Fertilizer and mulch will be applied to the piles as necessary.

3.3.4 Soil Redistribution

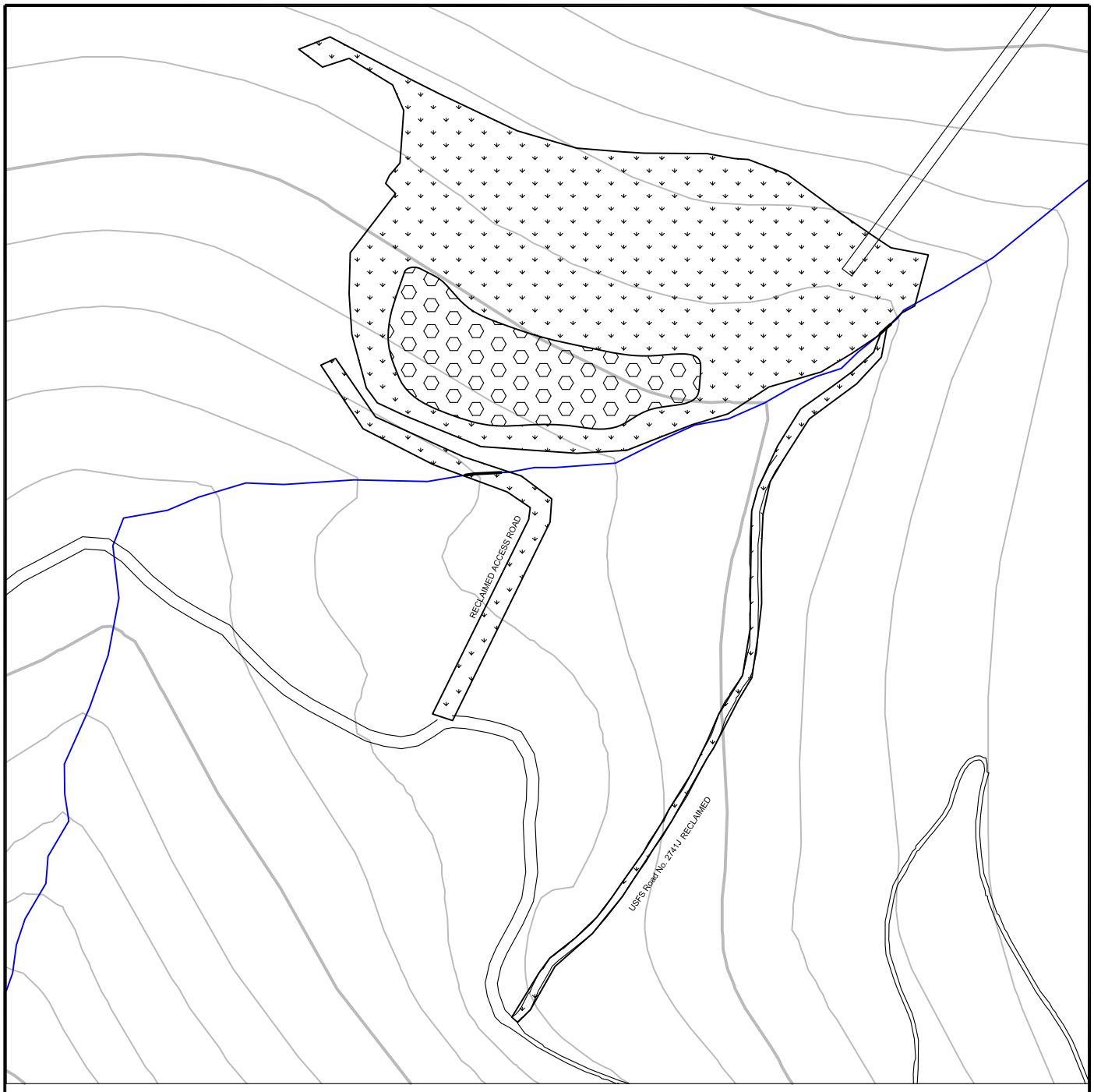
Prior to soil redistribution, compacted areas (especially the portal patio, roads and parking at the support facilities area) will be ripped to relieve compaction. This will also eliminate potential slippage to layer contacts and promote a hospitable root zone. Soil materials will be applied in lifts as thick as possible to decrease compaction.

Soils will be redistributed to achieve a uniform thickness, reduce compaction and minimize deterioration of chemical and physical soil properties. Second lift soil will be redistributed evenly over the 4.9 acre flat portal patio and 2.4 acres of the dump slope area. This will allow an average redistribution depth of approximately 15 inches of second lift soil. Approximately 5 inches of first lift soil will be placed on the flat 4.9 acre patio over the 15 inches of second lift for a total of about 20 inches. Approximately 1.8 acres on the portal patio slope face will be left as talus to achieve a mosaic appearance (see Figure 11). Coarse rocky soil types will be used to replace soils on slopes greater than 8%. Additional rocky soils shall be created from adding crushed rock to non-rocky soils if sufficient volumes are not naturally available.

Soils salvaged from the access road between the Chicago Peak road and the adit during construction will be applied to cuts and fills and seeded. Soils salvaged from diversion ditches will be regraded over the backfilled ditches.

Soil redistribution at the support facility site will occur on 1.0 acres of the site where the water treatment plant will be removed; the remaining area (Figure 12) will not require soil replacement as it will be left in buildings and the associated parking lot. Soil redistribution depth on the 1.0 acres of the support facility that will be re-soiled and reclaimed will be a minimum of 24 inches. An additional 0.7 acres including the topsoil stockpile area and septic drainfield disturbance will be ripped if necessary to relieve compaction and revegetated.

The infiltration ponds will disturb 1.0 acres. The Type L soils will be salvaged in two lifts to segregate clay substrate from better quality topsoil layers. When no longer needed, the ponds would be backfilled, regraded to original topography, covered with 24 inches of cover-soil and revegetated with a native grass/forb mix. The pipeline to the infiltration ponds would be plugged with concrete at both ends and left buried in place. The fence and any other surface facilities would be removed.



AREA TO BE LEFT AS TALUS

AREA TO BE REVEGETATED WITH SEED MIX SPECIFIED IN TABLE 10

SCALE
0 (In Feet) 250

NORTH

ROCK CREEK
EVALUATION ADIT PROJECT
SANDERS COUNTY, MONTANA
Revised January, 2007

POST MINING REVEGETATION

FIGURE
11

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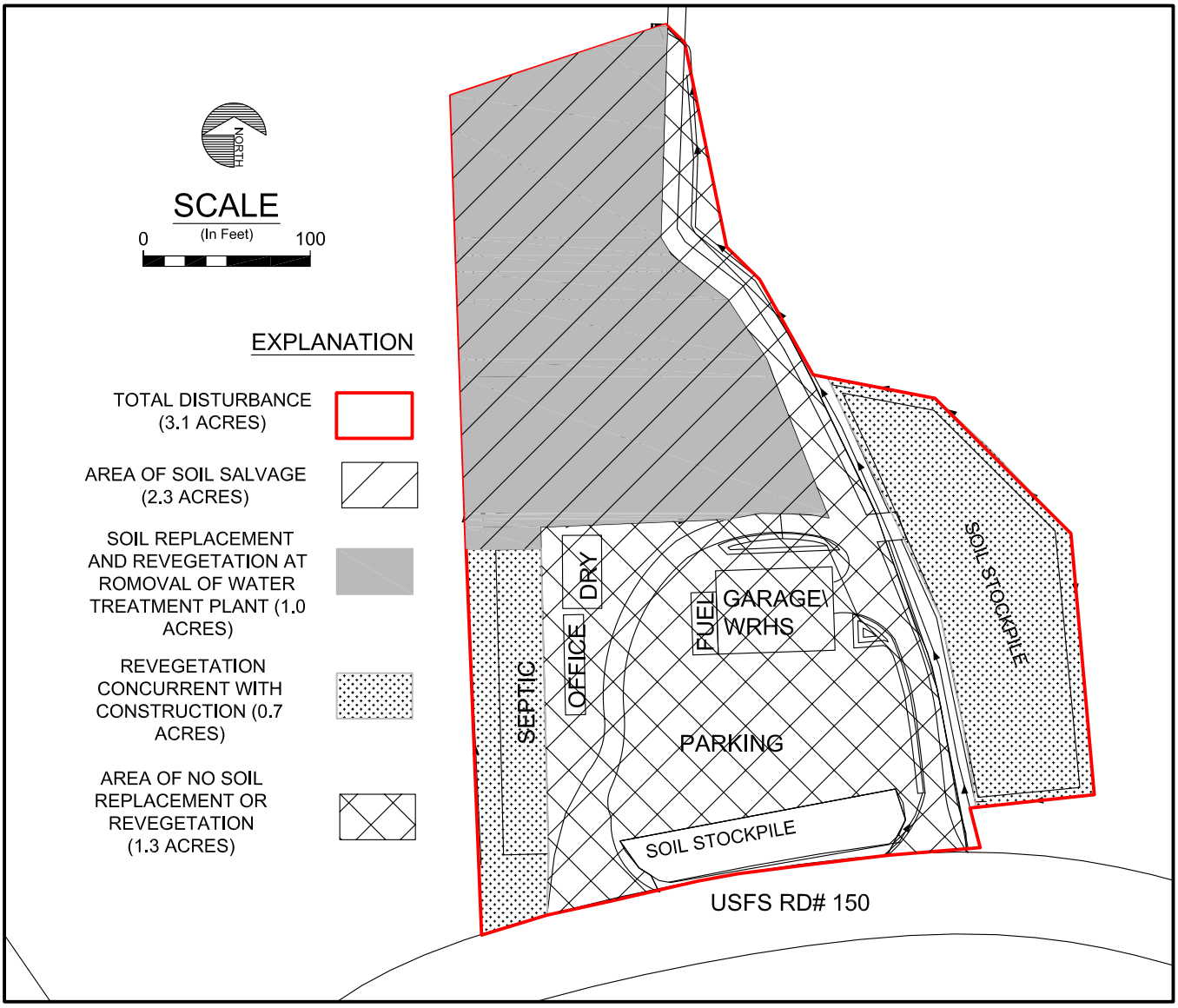

SALVAGED SOIL = 2.3 ac X 43,560 sq. ft./ ac X 1.58' soil salvage depth / 27 cubic ft / yd = 5,863 cubic yds

SOIL RECLAMATION REQUIREMENTS = 1.0 AC X 43,560 sq ft / ac X 2' soil / 27 cubic ft/ yd = 3,227 cubic yds

Total area of disturbance = 3.1 acres

Area to be reclaimed at completion of evaluation adit = 1.7 acres

Soil in septic drainfield area to be salvaged and replaced during construction

ROCK CREEK EVALUATION ADIT PROJECT SANDERS COUNTY, MONTANA	**SUPPORT FACILITY RECLAMATION AND REVEGETATION**	**FIGURE** **12**

3.4 REVEGETATION

Revegetation of the adit site and access road from the Chicago Peak road to the adit will be conducted to stabilize disturbances and restore wildlife habitat, watershed characteristics, soil productivity and visual resources to be consistent with post operation land use objectives. The adit access road from the Chicago Peak road will be recontoured prior to revegetation.

The support facilities area not retained for buildings, will be ripped, regraded and re-soiled prior to reseeding.

3.4.1 Revegetation Mixture and Rate

The adit site occurs primarily within the mountain hemlock/rusty menziesia habitat type and also includes sparsely vegetated scree or talus slopes. The Chicago Peak road traverses several habitat types including mountain hemlock/rusty mensiesia, subalpine fir/beadlily, grand fir/beadlily and western hemlock/beadlily. The majority of the road traverses clearcuts (up to about 5,520 feet elevation). Type descriptions are presented in Section 2.5 and the baseline vegetation report (Volume 1, Environmental Baseline Reports).

The revegetation mixture presented in Table 10 will be used to permanently revegetate the adit site, waste rock dump top, portions of the dump face and access road (Figure 11). This mixture is based on agency recommendations set forth in the Final EIS (Appendix J). It includes native species present in preoperation vegetation types as well as species typically used to reclaim sites in similar settings. The use of palatable grasses and forbs has been emphasized to facilitate use by wildlife. Native shrubs and tree stock are included in the mixture. Trees and shrubs will be grown from locally collected seed inoculated with appropriate mychoriza.

Species and seeding/planting rates may be modified as needed per agency approval. Locally collected seed will be utilized whenever possible. Seeding will be conducted immediately following construction to maximize plant establishment and minimize erosion, weed invasion and visual impacts. Any interim seeding would utilize the grass/forb component shown on Table 10.

TABLE 10. REVEGETATION MIXTURE FOR THE EVALUATION ADIT

Common Name	Scientific Name	Stocking Rate[1]
TREE PLANTING[2]		(trees/acre)
Subalpine fir	Abies lasiocarpa	60
Engelmann spruce[3]	Picea engelmannii	60
Douglas-fir	Pseudotsuga menziesii	60
Lodgepole pine[3]	Pinus contorta	60
	TOTAL TREES	240
SHRUB PLANTING[2]		(shrubs/acre)[1]
Alder	Alnus sinuate	16
Snowberry	Symphoricarpos albus	16
Oceanspray	Holodiscus discolor	16
Serviceberry	Amelanchier alnifolia	16
Rocky Mountain maple	Acer glabrum	16
	TOTAL SHRUBS	80
GRASS/FORB SEEDING		Broadcast Seeding Rate[1] (PLS pounds per acre)
Annual rye	Lolium multiflorum	2.5
Sterile hybrid grain	-	2.5
Northwest sedge	Carex concinoides	1.5
Pinegrass	Calamagrostis rubescens	1.0
Elk sedge	Carex geyeri	1.0
Beargrass	Xerophylum tenax	2.0
Fireweed	Epilobium angustifolium	1.5
Pearly everlasting	Anaphalis margaritacea	1.0
Yarrow	Achillea millefolium	0.5
Pussytoes	Antennaria rosea	0.5
	TOTAL GRASSES/FORBS	14

[1]This revegetation mixture is based on agency recommendations presented in Appendix J of the Final EIS. Species and rates would be modified as needed per agency approval.

[2]Containerized stock will be utilized.

[3]Innoculated with appropriate mycorrhiza.

The evaluation adit support facilities will be revegetated using the grass/forb component of Table 10.

A weed control plan is provided in Appendix P.

3.4.2 Seedbed Preparation and Seeding Method

Seedbed preparation will be conducted immediately after grading, soiling and, if used, fertilizer application. On slopes less than 33 percent, the seedbed will be disced and harrowed along the contour to break up large clods. On slopes exceeding 33 percent, on sites too narrow to negotiate equipment, or on sites where organic debris has been respread, the soil surface will be left in a roughened condition. Seed and mulch will be applied to fresh road cuts and fills as soon after construction as possible to ensure coverage by natural sloughing.

Permanent revegetation will be coordinated with other reclamation activities to occur as soon after seedbed preparation as possible. Fall seeding is recommended, based on local soil moisture conditions and germination requirements of selected species, however, permanent seeding will be conducted as soon as areas are ready for revegetation and access is possible (the permanent mixture includes annual rye and a sterile hybrid grain to promote rapid initial establishment). Interim revegetation of topsoil stockpiles, sediment control structures and cut and fill slopes of temporary roads will occur immediately following construction, utilizing 10 pounds of annual rye.

Disturbances will be broadcast seeded or hydroseeded due to rockiness, steepness of slope, and the relatively small acreage associated with the evaluation adit and associated roads.

3.4.3 Cultural Treatments

Cultural treatments which will be practiced to ensure successful revegetation include ripping to prepare the surface for soil placement, fertilizing, mulching and respreading woody debris. Ripping will be conducted prior to soil application to reduce compaction of the top of the waste rock dump, building sites and the portion of road surface that will be reclaimed. Reapplied soils will be tilled to break up the soil mass to improve water and air movement.

The decision to use fertilizer will be based on soil tests; application rates will be formulated to achieve soil macronutrient levels capable of promoting plant growth and productivity.

In order to reduce erosion and sedimentation during the life of the operation, disturbances will be vegetatively stabilized immediately after construction using the permanent mixture. Additionally, noxious weed seed-free straw mulch may be applied and anchored on slopes of 3:1 or less at a rate of 1.5 tons per acre. On steeper slopes, cellulose fiber hydromulch may be applied at a rate of 2000 pounds per acre (slopes >3:1 but <2:1) or 3000 pounds per acre (slopes 2:1 or greater). Geotextile fabric may be applied per the manufacturer's recommendations on selected sites as needed; it would not be utilized on rocky substrates.

Woody debris may be respread on waste rock dump slopes and road fill slopes to provide microsites for plant establishment, prevent erosion and mitigate visual impacts.

3.4.4 Planting

Trees and shrubs will be hand-planted on the adit site, waste rock dump top, on portions of road cuts and fills and all slopes exceeding 30% except won the adit dump slope where a portion of the slope will be left as talus as described in 3.3.4. Based on the ultimate tree stocking goal for 30 to 50 years after planting of 150 trees per acre, and assuming a 30 percent mortality rate, a planting rate of 240 trees per acre is proposed in Table 10. Planting patterns will not be uniform, rather, planting will be conducted to mimic natural patterns on adjacent undisturbed ground. Netting will be utilized to protect trees and shrubs from wildlife browsing.

3.5 WATER RESOURCES

As a result of reclamation activities, water resources in the Rock Creek project area are intended to approach pre-mining conditions. Hydrologic monitoring will continue after completion of evaluation activities to assure protection of water resources.

Surface facilities near the adit will be regraded and contoured to maintain the natural, pre-mining drainage system. All drainage and diversion structures used during the operational period at the site will be eliminated after cessation of operations (Appendix E).

The portal patio will be regraded to blend edges with the natural contours of the adjacent talus. Due to the coarse size of the barren rock material (predominantly less than 1 foot, greater than 5 inches), precipitation on the portal patio is expected to rapidly infiltrate and runoff is not expected. The surface of the portal patio will be sloped back towards the uphill side with a two percent grade and standing water is not expected.

Water pumped from the adit will be monitored for quantity and water quality throughout the operating period. Water will be cleaned through the water treatment facility and discharged in accordance with applicable permits while evaluation work is being done in the adit. After cessation of blasting, nitrogen concentrations of adit water will decrease to near background concentrations. At such a time that nitrogen concentrations have decreased to acceptable levels as determined by the agencies, the adit pumping may be stopped. If, however, timing of mine development is appropriate, adit pumping and treatment and discharge of produced water may continue until the development adits intersect the evaluation workings and mine water would drain by gravity to the mill site.

3.6 POST-OPERATION SOLID WASTE DISPOSAL AND ADIT CLOSURE

After evaluation work is completed, all buildings, related equipment and infrastructure at the adit site not needed for the mining operations will be dismantled and removed. Structural foundations will be leveled and filled. Following removal and salvage of facilities, any remaining solid waste will be disposed of in accordance with laws and regulations of the Montana Solid Waste Management Bureau and Sanders County. Inert waste such as steel,

concrete, plastic or wood will be buried in on-site waste disposal areas or sold to scrap dealers for recycling; some waste may be transported to an approved waste transfer station as authorized by the county solid waste district.

During the evaluation adit operations (and subsequent mine operations), the adit will be closed except to authorized personnel. At the end of mine operations, the adit will be sealed. Sealing would be accomplished by backfilling the first 50 feet of the adit with rock. Barren rock would be used and soil placed over the barren rock at the surface. Prior to backfilling the adit RCR will investigate the possibility of using bat grates and leaving the adit as bat habitat.

3.7 MONITORING

3.7.1 Water Resources

The final post-operation water resources monitoring program will be developed and approved in conjunction with the Montana DEQ and U.S. Forest Service. Results of operational monitoring will be used to establish monitoring sites, analytical parameters, and frequency of monitoring during the post-operation period.

3.7.2 Respread Soil Testing

Stored soil will be tested before respreading to identify what, if any, deficiencies or limitations in soil physical and chemical properties exist that may be affecting plant growth. Appropriate fertilizer, liming, organic matter, and other amendments will be determined.

3.7.3 Soil Erosion and Construction Monitoring

This includes monitoring during active construction as well as long-term maintenance monitoring. Monitoring will be conducted at the evaluation adit site, waste rock dump and access roads to identify areas where slumps, rills, gullies, and sheetwash are occurring. Any identified erosion problems would be immediately corrected. Routine long-term maintenance monitoring will be conducted during spring and fall after heavy storm events.

3.7.4 Revegetation Monitoring

Revegetation will be monitored annually during the growing season to identify areas where vegetation may be failing and determine the cause. Revegetation monitoring will be conducted in conjunction with routine soil maintenance monitoring. Systematic visual inspections will be conducted to identify areas that have inadequate cover, poor seedling growth, damage, or obvious nutritional deficiencies.

If problem areas are encountered, the cause will be identified. If the cause appears to be related to soil infertility or toxicity, a soil testing program will be implemented. Tests would be conducted to ascertain macro- and micronutrient status, pH, cation exchange capacity, and potential toxicity and heavy metal problems. Appropriate remedial actions will be taken to correct any problem.

Tree mortality surveys will be conducted in years 1, 3, and 5 after planting. If tree mortality rates exceed 150 trees per acre, the cause will be identified and remedial action will be undertaken.

3.7.5 Reporting

A report will be submitted annually describing monitoring results, discussing reclamation problems and identifying remedial measures taken.

3.8 RECLAMATION SCHEDULE

Concurrent revegetation of temporary roads, soil stockpiles and surface water control structures will occur as soon as practical following disturbance. After completion of the adit, permanent revegetation will be conducted on portions of the waste dump slope containing sufficient fines to support vegetation. The road cuts and fills will be seeded as an interim measure as soon as practical without interfering with the evaluation work.

Once the evaluation phase is completed and a decision on full scale mining is made, the nature of the reclamation of the evaluation adit site will be determined. If mine development is planned, reclamation of the patio surface will need to wait until the ore can be removed and

run through the mill. If mining is not contemplated, the ore would be backfilled in the evaluation adit, the portal backfilled, and the patio surface reclaimed. Regrading, soil placement and revegetation will be completed during the first construction season after a decision on mining is made or following final mine closure. If mine development does proceed, then the evaluation adit operations and reclamation will be integrated into the overall mine plan.

Following soil replacement and revegetation, exposed rock and waste rock at the exploration adit site would be treated with an oxidizing agent to meet visual quality objectives if determined necessary by the Forest Service.

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